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ABSTRACT

The document examines aspects of human diversity and their implications for educational research, design, and management. The objective is to foster and create more effective and equal education by better understanding the relationship between personal attributes and educational environment. The material is presented in 15 chapters. Chapter I discusses teachers' implicit theories of the teaching-learning transaction in relation to person-environment interaction. Chapter II examines the issue of creating environments for learning which are adaptive to individual needs. It suggests six principles for the design and implentation of adaptive school programs. Chapters III through XIII each focus on a personal attribute and its implications for school processes, policies, and research. Topics are socioeconomic status, language, achievement and motivation, sex differentiation, ethnicity, culture, identity, health and nutrition, affective response tendency, cognitive style, and environment. Chapter XIV explores the current role of schools in relation to human diversity, recommending practices, programs, and research which would increase sensitivity to students. Chapter XV summarizes each chapter and the document as a whole. Recurring themes are a concern for setting or situational influences, person-environment interaction and its relation to behavior, the necessity of subjective evidence, and the problem of transcontextual validity. Conclusions are that personal dimensions of diversity must be examined and understood in the context of their interaction, and that most effective development and learning are achieved when diversity variables are in balance. (CK)

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HUMAN DIVERSITY AND PEDAGOGY

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Educational Testing Service
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Introduction

Edmund W. Gordon and Stephanie Shipman

There are two critical and continuing problems in education that, despite their independent organizational and political histories, share common conceptual foundations for their solutions. These problems have emerged as a result of group and individual differences in pupil attributes on the one hand and of the commitment to equality of educational opportunity in a society of pluralistic values, purposes, and standards on the other. The twelve knowledge synthesizing essays that form the substantive content of this report were developed against a background of concern with these two problems: the pedagogical relevance of our knowledge of human diversity, and the implications of that knowledge for making education more effective and its opportunities more equitable.

In the 1960s we saw an enormous upsurge of interest in the commitment to equality of educational opportunities for various groups, specifically ethnic minorities, females, children of low-income families, and children for whom standard English is a second language system. As our preoccupation with the civil and human rights movement subsided, some of the political pressures and momentum for change that were typical of the sixties were reduced. Yet a concern for equality of opportunity and for social justice in our society continues to prevail. Our thinking about equality of opportunity has focused on ethnic, language, sex, and socioeconomic group membership. In our concern for better understanding of the needs of these groups, and often for rationalizing the failure of our institutions to serve them well, emphasis was given to the identification of alleged deficits in these groups. These alleged deficits tended to reflect those differences in attributes in the target groups as compared with the normative position on these attributes for white English-speaking middle-class males. Political and social sensitivity to the pejorative nature of such interpretations led to a de-emphasis of the alleged deficits and to expressed concern with the ways in which these populations differed from the majority as well as the ways in which these differences can be accommodated in education. The struggles of this period seem to have resulted in a renewed concern for group differences and a heightened recognition that we are a society of diverse peoples with pluralistic values and that these diverse peoples need to be served by the society with a greater degree of equity.

The equalization of educational opportunity--the achievement of a greater degree of equity (fairness, even-handedness, impartiality)--is thus a central, contemporary concern. The problem that continues to plague us is manifested in the fact that in our domestic society educational opportunity and achievement seem to be irreversibly tied to ethnic caste status, to economic class status, to status imposed as a function of gender, and to status as a function of one's proficiency in standard English. Despite the centrality of concern with this problem, solutions continue to elude us. The recalcitrance of the problem may be related in part to the way we have thought about it. The way in which our concern is conceptualized can have a great influence on the extent to which the concern gets translated into appropriate programs, and on the way programs ultimately address the problem that gave rise to the concern in the first place. In this report reconceptualizations of the problems of group and individual differences and the equalization of educational opportunity are presented in the context of emerging knowledge concerning human diversity and teaching and learning transactions.

The national problem posed by a concern with equity is that of making educational and social development, and ultimately social/political/economic participation and survival, independent of the backgrounds from which differential status group members come. It may be that this is the ultimate test of the viability of a democratic, diverse, and pluralistic society. Unfortunately, there are no ideal models that can be followed. The United States is the first society to deliberately set about creating a democratic nation from a population of diverse ethnic, national, racial, and religious groups. The society has alternatingly--and sometimes simultaneously--stressed either unitary or pluralistic standards and either restricted or universal social justice to which education is increasingly expected to contribute.

Educators are called upon to rise to the challenge by making a two-pronged effort. The first line of effort, and one prescribed by law, is to insure fairness and equality--"equal protection"--in the distribution of the nation's educational resources to ethnic, economic, geographic, language, handicapped, and sex groups when members of those groups present themselves for service from institutions serving the public. Since equity at this level means equal treatment, we face the problem of how to reduce or eliminate the educational neglect of some subgroups in our population and the inequitable distribution of known treatments and available resources across the varied populations served by education. That is, how can we better enable our institutions of education to provide equal protection--equal service to all of their clientele? Solutions to this problem are most likely to take the form of changes in laws (or in their interpretation), regulations, policies, etc., that affect opportunity for access. These solutions may also involve changes in the organization and structure of educational service delivery systems, systemic changes in the agencies and institutions of education, and changes in the control and management of these systems. The goal is to make available to all the best that the state provides to any particular segment of the population, with a high degree of consistency across subpopulations.

The second line of effort that educators are called upon to follow is as yet not so clearly defined in law. It involves fairness and equality--"equal protection"--in the distribution of resources in relation to such functional characteristics as may be determined by mental, physical, and social conditions, and as may be reflected in the processes by which learning behaviors and developmental choices are mediated. It is here that differences in language systems and their utilization come into focus, and that the law is increasingly interpreted to require that the design and content of the curriculum more appropriately reflect the functional (viz. linguistic) characteristics for the learners. There are also the functional implications of handicapping conditions that recent legislation has brought to the attention of educators. In both instances, the characteristics are used as group markers to designate pupils who must receive special attention. However, it is the way in which the characteristic is manifested in the learning behavior of the pupil (its functional characteristic) that should influence the nature of the special attention or educational service. It is here that the appropriateness of the learning situation is being scrutinized to determine its relevance for these and other functional learner characteristics that require attention if a thorough and adequate education is to be provided.

Since equity at this level implies social justice--appropriateness and sufficiency of service to achieve some common criterion without limiting the privilege to exceed that standard--we face the problem of correcting inadequately developed treatments and insufficiently allocated resources to meet the differential requirements essential to the achievement of an agreed-upon level of competence (thorough and adequate education). The problem posed here includes but takes us beyond policy, regulation, management, budget, political, and economic considerations to a concern with the person-environment-situation interactions that determine outcomes. The concern here is with functional aspects of the institution, functional aspects of the learner, and the needs of the human and nonhuman vectors in that ecological system. The problem involves the analysis and design of, and continuous involvement in, the adjustment of institutions, people, and services. The goal is to make available to each person that which is essential to the achievement of the outcome criterion.

Turning back to the first line of effort, we see that the courts have quite adequately enunciated the principle of equal treatment in ruling that unequal access by subgroups of the population to the public educational resources of the state is unlawful. Educational institutions are thus required to stop the arbitrary segregation of pupils grouped by race or ethnicity; to end their failure to provide sufficient instruction to speakers for whom English is not the dominant language; to end their failure to provide for females educational options and services that are as rich as those available to males; and to end their failure to deal adequately with students who are handicapped by physical, mental, or emotional disabilities. In correcting conditions like these, what educators are doing is trying to change the validity of existing predictions by introducing correctives for the failures or errors of the system. This strategy is based on the assumption that much of what we currently deliver, or know how to deliver, can greatly improve the function of a majority of our pupils. What Bloom (1976) and Clark (1965), commenting from different perspectives, have suggested, is that we have targeted these efforts on too limited a number of pupils and often on selected groups of pupils. Bloom stated that generic interventions directed at correcting schooling errors seem to have the possibility of bringing as many as 80% of our pupils to the level of criterion mastery. As described, his corrective intervention involves the policy decision to allocate progressively more instructional time in relation to a demonstrated difficulty with criterion mastery. As a starter, this strategy would insure that all pupils have exposure to that which we know how to deliver. This systemic change begins to acquire individual specificity as time of exposure is influenced by differential pupil need. Those pupils in need of greater exposure would receive it in order to facilitate development as a corrective intervention or as an enrichment strategy.

The problems posed by differential characteristics, conditions, needs, and response patterns in groups of pupils are reflected in the argument by Coleman and his colleagues (1966) that school achievement should be made independent of the social conditions and of the prior social status of the group. Coleman and his colleagues were sensitive primarily to achievement differences in social class and ethnic caste groups. In pursuit of solutions to these problems, we may have focused too sharply on the political/social implications of such group identity and insufficiently on the pedagogical significance. It may be that as important as ethnicity, SES, language, sex, or even geographic origin are as group indicators for political/social purposes, they are too gross to be, and may be irrelevant as, functional indicators of the need for purposes of pedagogical design and planning. For example, what does the fact that a child's skin is brown tell the school about the design of learning experiences for that child, and even worse, what does that skin-color variable tell the school about how a specific child goes about solving a problem in learning? Yet, large proportions of our investigations and efforts at curriculum adaptation have been directed toward ethnicity as defined by skin color or toward language identity as an indicator variable in planning and organizing school programs.

Similar practices occur in relation to social class and gender. There may, indeed, be aspects of biologic sex and certainly aspects of gender that have more or less direct implications for learning behavior and the design of learning experiences. Increasingly, however, the evidence mounts in support of the assertion that there are dimensions of human diversity that appear to have high relevance for pedagogy and that may vary as much within language, ethnic, and class groups as between them. Cognitive style, interest, motivation, aspiration, temperament, and learning rate are but a few of these dimensions. These are not class or ethnic or language or sex group-bound variables. Increasingly, even variables related to social practice--such as childrearing practices, support for learning, and parents' aspirations for their children--are beginning to be so heterogeneous with respect to the indicator groups that ethnicity, socioeconomic status, and occupational status are less useful than they were once thought to be as indicators of the extent to which exposure to such practice is a part of the life experience of the children identified by these group labels. The evidence increasingly suggests that wide variance exists in the character and quality of the learning behaviors that children bring to and develop in school. It also appears (although the evidence is less clear) that the conditions under which learning and development occur influence the quality of achievement as much as does the character of the learning behavior evidenced. If we grant the possible validity of these two assertions, it is possible to conclude that relationships between the character of the learning behavior and the character (length, nature, and appropriateness, for example) of the learning conditions are of crucial importance as determinants of the quality of achievement. If this somewhat complex statement of a rather simple conception holds, it has critical significance for conceptualizing the central issue involved in planning adequate educational programs for children of diverse human characteristics. Particularly it has significance for those children who have been traditionally less well-served by our educational systems--those who are neglected, those who are discriminated against, and those who are disadvantaged.

For more than a score of years, the concept of "equal opportunity" has dominated educators' thinking. The concept grew out of court litigations around issues related to ethnic segregation in public education and disruptive inequality in resource allocation. As a result, the nation has affirmed its commitment to equality of educational opportunity for all and has translated this to mean equal access to the educational resources provided through public funds. But equal opportunity may not adequately reflect the implicit commitments of a democratic, diverse, pluralistic, and humane society. If what we are committed to is to make educational and other achievements independent of ethnic group, social class, sex group, religious group, and/or geographic group origins, a concept such as human diversity with social justice may be more worthy of our tradition.

Human diversity focuses our attention on those aspects of differences or variance in human characteristics that have relevance for pedagogical and developmental intervention. Social justice moves us beyond a concern for distributive equality to a concern for distributive sufficiency. When we speak of distributive sufficiency, we are immediately forced to look to questions of need rather than of share. The functional educational question becomes, "What do the special characteristics of this person or group of persons require of the intervening process to enable this person to function with adequacy and satisfaction?" We are forced to ask not only what is essential but also what is sufficient to enable achievement. The answer to this question dictates the quality and the quantity of the educational intervention.

The intervention indicated by the answer to the question posed may violate our more narrow conception of equality--impartiality--but, given the compelling facts of human diversity, it may be the only way in which we can approach social justice. To honor, then, the implicit commitment to equality of opportunity, we may be required to embrace a new commitment to the nurturance of human diversity in the pursuit of social justice.

Concern with human diversity is not new to educators. We have a long history of awareness of individual and group differences. Unfortunately, an examination of that history reveals that pedagogical concern for such differences has been far more obvious in our verbalizations than in our practice. Most teachers recognize that learners differ greatly in their learning-relevant and learning-nonrelevant characteristics. Good teachers go to great lengths to try to make adjustments in the learning experiences of children whom they know to be unlike other learners. A sizable body of research has developed around concerns for the individualization of instruction and for the exploration of the potential of attribute-treatment interactions. Yet the range of variance in curriculum design and instructional practice is far less rich than is the diversity to be found in the populations of learners. Only modest complementariness exists between the emerging knowledge base referrable to functional and status human characteristics and the knowledge concerning theories and technologies of curriculum development and pedagogy. Our best developed programs of individualization tend to focus on single aspects of diversity--learning rate, interests, aspects of personality--or on combinations of developed abilities, achievement, and background experiences.

In the United States the oldest and most common form of dealing with individual differences is homogeneous grouping by age, sex, race, and general ability level into school, grade, classroom, and activity units. Although grouping by age remains the norm, grouping by sex, race, and general ability have become less common at the school, grade, and classroom levels, partly reflecting democratic concerns regarding the unequal allocation of resources and the academic stimulation among such groupings. It is relatively well recognized that grouping by these latter categories into classroom units does not individualize education; it simply reduces variation in a classroom on one dimension, but not necessarily on any other dimension. Lately, grouping by ability into autonomous classrooms has come under attack because most of the research on grouping practices has shown no academic benefits to low, medium, and high groups over what they would have achieved in similar but mixed-ability classrooms. In addition, some of the affective outcomes from such groupings have often been rather insidious, stemming from the social-class character of the resulting structure, especially when confounded with race and sex segregation (Esposito, 1971).

Gagné's (1975) system of identifying the hierarchical cognitive requirements of an educational task has had a tremendous impact on the best individualized learning systems extant today. In stressing the importance of a careful analysis and the teaching of the prerequisites of any skill or concept proposed to be aequired, he laid the groundwork for the possibility of teaching a child any concept or skill whose prerequisites can be carefully identified. In learning hierarchically arranged information and skills, it is presumed that the individual characteristics of importance are achievement of the prerequisite skills and information. Gagné recognized different kinds of learning (signal, stimulus response, chaining, verbal association, discrimination, concept and rule learning, and problem solving), each of which requires different modes of presentation and teacher prompts and/or direction to be most effective.

This process, then, is an example of transforming the task to meet the demands of both the kind of learning involved and the student characteristics considered most relevant to the task at hand, regardless of the child's performance on some measure of intelligence or a more global type of achievement measure. The assumption is that children fail at an educational task only because it was inappropriately presented or it was mistakenly assumed that they had the identifiable prerequisites. Thus children take a pretest on the material to be mastered and, according to the information received regarding their acquisition of the prerequisites, they follow the universal sequence of steps for that material, although they may start at earlier or later steps than their peers. Gagné has formed highly precise but generalizable rules for teaching particular "bits" of learning within any hierarchically structured topic relative to the particular "bits" of learning the child has already acquired, thus forming a systematic basis for individualizing education relative to prior achievement.

A few university centers have developed this principle of individualizing education by prior achievement into large-scale individualization programs that are implemented in school systems across the nation with federal support. From the Wisconsin Research and Development Center, Individually Guided Education (IGE) is advanced as a "comprehensive alternative system of schooling designed to produce higher educational achievements by providing effectively for differences among students in rate of learning, learning style and other characteristics" (Klausmeier, 1975, p. 48). It has seven major components: multiunit school instructional and administrative arrangements; instructional programming for the individual student; initial, formative, and summative evaluation of student learning; curriculum materials appropriate to the two latter evaluations; an active program of home-school community relations; environments that facilitate IGE practices; and continuing research and development to improve IGE at all levels. Instructional packages have been developed for use within this organizational system, but their emphasis is on providing training, and management and data-handling strategies for classroom to state education agencies to support an integrated, comprehensive, smooth-running effort at individualizing education.

Individually Prescribed Instruction (IPI) (Glaser & Rosner, 1975), from the University of Pittsburgh's Learning and Development Research Center, is a school- and classroom-based system for individualizing education through teacher and support service training as well as a developed set of instructional materials. The curricular materials are a hierarchically arranged sequence of modules in traditional school subjects and skills that have behaviorally specified objectives and at least two alternative style modules for each unit, plus alternative activities for the student to choose from for mastery of the unit objectives. Although the units are sequenced hierarchically according to prior learning of task-defined prerequisites and are parallel according to topics, alternative units can be chosen according to reading level or cognitive maturity. The added alternative activities provide varied interests and activity preferences.

Program for Learning in Accordance with Needs (PLAN*) (Flanagan, Shanner, Brudner, & Marker, 1975) is a multimedia system from Westinghouse Learning Corporation for constructing personal programs of study in reading and language arts, mathematics, science, and social studies. The building block here is a Teaching Learning Unit (TLU) comprised of instructional objectives associated with recommended learning activities and criterion tests. Thus they are not a set of learning materials but rather a guide to using them, with alternate TLUs where different sets of instructional materials involving different kinds of activities are referred to the same objective. Programs of studies are developed with the student and combine TLUs in accordance with the following goals: (a) acquaint students with the varieties of opportunities, roles, and activities available in the field of occupations, in personal, social, and civic relations, and in cultural and recreational leisure-time pursuits;

(b) acquaint students with the status of their development concerning their abilities, interests, physical and social characteristics, and values in the areas of education, occupation, citizenship, and the use of leisure time; (c) assist students in formulating long-term goals and taking responsibility for and planning a developmental program to achieve those goals; (d) assist students in managing their own development with a program of personal reinforcement; (e) assist students in making a smooth transition from high school to the world of work, higher education, and civic responsibilities (Flanagan et al., 1975, p. 147).

From the preceding descriptions it should be clear that although the emphases of the plans differ with regard to the slightly different age of the target groups, they all lean heavily on the goal of individual mastery of behaviorally prescribed objectives, the choice of alternative presentations of instructional material, frequent pre- and posttesting with regard to achievement level, the special training of teachers, administrators, and support personnel for data management and for counseling and diagnostic services, and integrated team-work style for administrative and management procedures. The intent of each program is to improve student achievement outcomes and interest in schooling, and after the two or more years required to complete implementation and adjustment, all programs appear to do very well, especially in regard to the achievement of their low- and middle-ability groups. Cost varies, but many of the testing and data-processing functions require the use of computer terminals for the efficient use of personnel time (Talmage, 1975). Although Glaser & Rosner (1975) insist that individualization does not mean that students work independently all or most of the time, concerns have been voiced that too little emphasis is being placed on cooperative work strategies, the development of appreciation, and social maturity. In a study by Shimron (1976), one of the LDRC members, it was found in observing four slow and four fast students in an IPI classroom that both groups spent about 14% of their time arranging their assignments. But the fast students spent approximately 40% of their time in on-task activities, whereas the slow students spent only 22% of their time in such activities, and spent as much time just sitting at their desks. Shimron concluded that, with self-assessment and more encouragement of constructive pupil interaction, the students would not spend as much time waiting for guidance from the teacher. Consequently, they might get more done, might feel better about the activities, and might spend more time on them.

Periodically articles appear in applied educational journals by teachers describing how they have met the call for individualization within their classrooms. Essentially, a hodge-podge of methods and conceptions of diversity appear out of the pragmatic quest to deal adequately with the obvious range of differences with which they are confronted. Social behavior and motivation are common points of interest, with advice such as the following: assign your high-achieving, shy student(s) to help answer the numerous organizational questions of the low-achieving students; identify low- and high achievement-motivated "talkers" and direct your attention and energy to those who need it by insisting, for example, that their progress charts be up to date.

Presumably these are highly sensitive and conscientious teachers who, whether they do or do not read the educational psychology journals, are making systematic observations and judgments concerning their pupils congruent with educational research conclusions concerning the dimensions relevant to educational diversity. Unfortunately, we must assume that these teachers depict rather uncommon classroom procedures, and that most public education in this country is individualized only to the extent of providing readers with texts on a few different reading levels, combined with some separate instruction for small reading groups within a classroom unit.

Bloom (1964) offers a systematic but generic approach, i.e., increased and repeated exposure (time on relevant tasks) as likely to be more productive than further effort at having instruction match learning characteristics. His concept of mastery learning demands attention. Bloom has elaborated and implemented a notion first advanced by Carroll (1963). Carroll's model of school learning posited that although there are faster and slower learners, they do not differ significantly in their ability to learn, given time and appropriate learning experiences. That is, when slower learners attain the same level of achievement as faster learners, slower learners can learn, transfer, and retain equally complex and abstract ideas. In Human Characteristics and School Learning, Bloom (1976) has developed this idea further and has concluded after several years of research that "most students become very similar with regard to learning ability, rate of learning, and motivation for further learning--when provided with favorable learning conditions" (p. x). He rejected the idea that observed individual differences in school learning are fixed, in favor of the conception that much of this observed variation is manmade and accidental. Two lines of research are summarized to support this position: (a) a large portion of variance in school achievement is accounted for by differences in home environment (Coleman, Campbell, Hobson, McPartland, Mood, Weinfeld, & York, 1966; Comber & Keeves, 1973; Husen, 1967; Plowden, 1967; Purves, 1973; and Thorndike, 1973); and (b) what parents do in their interactions with their children is the major determinant of these characteristics rather than their socioeconomic status, level of education, or other status characteristics (Bloom, 1964; Dave, 1963; Hanson, 1972; Marjoribanks, 1974; Mercer, 1973; Wolf, 1966; and Williams, Note 1).

Bloom (1976) perceived the stability and, often, the actual broadening of individual differences in achievement over the years (Bloom, 1964; Bracht & Hopkins, 1972; Payne, 1963) as resulting from the stability of home and school processes and characteristics over the elementary and secondary school years. Although it is the home that develops "language, the ability to learn from adults, and some of the qualities of need achievement, work habits, and attention to tasks that are basic to the work of the schools" (p. 1), the schools, in turn, type the child's "learning ability" first in reference to the skills and attitudes developed in the home, and later by the supposed advantage he has been able or willing to take of the resources of the school. (The latter, of course, presumes equal opportunity among pupils to profit from essentially the same instruction, without respect to entry characteristics.) On the basis of this commonplace compounding of diagnostic errors with nonequivalent experiences, Bloom asserted that the differences of importance are differences in learning, i.e., what and how one has learned, and rejected the notion that there are differences in learners. He saw capacity to learn as not differing significantly across learners when differences in learning have been appropriately addressed. He asserted further that it is futile and irrelevant to talk about learning ability as distinct from learning history, especially as it is used to imply ceilings on future achievement. Rather, what is considered important and needed for explaining individual differences in school learning, and for providing "appropriate learning experiences," is a detailed description of the students' learning history as it pertains to his or her present capabilities and needs in a new or ongoing educational task.

Bloom's theory of school learning posits three interdependent variables whose variability will determine the nature of learning outcomes: level and type of prior achievement, affective interaction of learner and learning tasks, and match between learner and learning experience. These are translated into three input variables for the learning task: cognitive entry characteristics, affective entry characteristics, and quality of instruction (the extent to which, especially, cues, practice, and reinforcement are appropriate to the needs of the learner).

> The degree to which one of these variables is less than optimal will determine the level and type of learning achieved, the difficulties encountered in the learning process, the time and effort required to accomplish the learning that takes place, and the students' affect about the learning, the learning process, and the self. (p. 12)

Thus these variables are considered an economical, current summary of the individual's learning history relevant to the proposed learning.

Bloom presented Mastery Learning as an ideal instructional model for adapting to these relevant individual differences. He claimed that all of the versions of mastery learning presume that most students can attain a high level of learning capability if instruction is "approached sensitively and systematically, if students are helped when and where they have difficulties, if they are given sufficient time to achieve mastery, and if there is some clear criterion of what constitutes mastery" (p.4). Bloom listed a number of instructional activities that seem to work. However, it is only the feedback and corrective systems of the four components of appropriateness of instruction to learner characteristics (cues or directions provided the learner, participation in a learning activity, reinforcement secured, and a feedback and corrective system) that have received the most attention and practical development. In most working models of Mastery Learning, the prime or sole entry characteristics of the learner considered for instruction are rate and level of past learning.

> In general, we believe that the greater the variety of instructional materials and methods used within a classroom, the greater is the likelihood that each student will secure the ones he needs for his learning. What remains is to determine sounder procedures for relating individual differences in learners to differences in the way in which learners should encounter the cues. (p. 117)

> What is especially needed are studies where the rewards are related to individuals in the class, since the frequency and variety of reward available to the class do not indicate anything about which students receive the reinforcements and what effect it has on their learning. (p. 121)

Thus Bloom essentially concluded that, given the lack of clear-cut knowledge about the relationship of particular instructional variables to individual information processing, the best approach in schools at present is to provide group instruction through a variety of methods, to monitor the process at short intervals, and to prescribe correctives at the first sight of trouble. The central question he has raised, however, is still as much at issue now as then: How do we determine the appropriate learning experience? What are the essential conditions of learning? These and other questions must be answered if we are to develop further his promising conception of quality of instruction as the goodness of fit of the instructional mode to the students' educationally relevant characteristics, beyond sensitivity to learning rate and level of previous achievement.

With the exceptions mentioned above plus a few other less well-known examples, education seems to have taken little cognizance of the possible relevance of human diversity for pedagogy. It is not surprising that educators have made so little use of the knowledge base regarding learner characteristics. Not only is this knowledge complex and contradictory, but the major recent efforts at systematizing, clarifying, and interpreting the many related studies have provided little empirical basis for optimism and no guidelines for its application. Bracht's (1970) extensive review led him to conclude that the empirical evidence does not support the expectation that the matching of learner traits and learning experiences will result in significantly improved learning. After some twelve years of exploration and contemplation, Cronbach and Snow (1977) go to great lengths in their most recent book to report the limited utility and the complicated problems of the empirical evidence in support of attribute-treatment-interactions (ATI) as an approach to the improvement of education. But there continues to exist a persuasive logical relationship between learner characteristics (attributes), learning experiences (treatments), and learning outcomes (interaction results). Several of us, including Cronbach and Snow (1977), Endler and Magnusson (1976), Glaser (1977), David Hunt (1975), J. McV. Hunt (1961), and Messick (1970) find it hard to dismiss the promise of the paradigm despite the missing evidence of its validity. The rather tenuous nature of the paradigm does help explain why it is not more strongly represented in curriculum development.

Aptitude-Treatment-Interaction (ATI) research has been overwhelmingly the expression of concern regarding the importance of individual differences for learning and teaching. It is best characterized statistically as the comparison of the regression slopes of a variable from individual behavior onto an educational outcome variable under two or more contrasting educational treatments. Two kinds of interaction are defined by plotting the calculated slopes, for the range of the ability measured, on the same graph to describe ordinal interactions (one treatment is associated with significantly higher criterion scores than the other treatment for a section of the aptitude range, with an insignificant difference between the two treatments at another part of the range) and disordinal interactions (the slopes actually cross so that at one section of the aptitude range one treatment produces significantly higher results, whereas the other treatment produces better results at a different part of the aptitude range).

Cronbach and Snow (1977) presented a thorough review of the substantial amount of research conducted over the last decade that attempted to discover ATIs using this, and less powerful, statistical methods. They moderated Bracht's (1970) and others' conclusions that there was no evidence for meaningful ATIs with the observation that for the great majority of the studies they reviewed: (a) small sample sizes militated against respectable power in the statistical tests and encouraged chance effects; (b) person and treatment variables were paired speculatively without a sound theoretical background for generating hypotheses; and (c) treatments were usually short, ill-defined, or of an excessively unnaturalistic nature. Moreover, they pointed out that inconsistencies across "replications" are likely because of unanticipated interactions with variables considered too irrelevant to document and are, therefore, unresearchable or unexaminable.

Why is the Attribute-Treatment-Interaction knowledge base so confused? In a very provocative article, Messick (1970) suggested that one of the problems is that we are trying to tally up the score before we have learned the rules of the game. The interactions that have so far been studied are sometimes based on human traits for which the assessment technology is quite limited. Sometimes treatments are used that may be too simplistic in their design, and that therefore provide an insufficient complement to the trait under study. Our conceptions of the interactions studied are usually tied to methodological or programmatic constraints rather than based on comprehensive theoretical models.

One of the most serious problems produced by the ATI scoreboard approach is the assumption that studies using the same independent and dependent variables are studying the same interactions between independent variables. The crucial distinction is that A by T interactions are dynamic multiply-determined events only partially describable or investigable by present statistical methods. Even recognizing that some factors may be more crucial than others in determining (or predicting) a particular behavioral event, the one-on-one independent and dependent variables model is inadequate to explain specific complex behaviors in complex partially controlled real-life situations/settings. The major problem in treating these studies as multiple replications is that although we know that many factors affect school performance, this often overlapping interaction of identified factors/variables is not controlled or accounted for when the findings of these research studies are aggregated and compared.

When looking for main effects, it is legitimate to expect that the effect isolated should be operative in every instance that exemplified the unhampered operation of that effect. On the other hand, when investigating interactions, i.e., the complicating or mediating influences of independent variables on each others' effects on dependent variables, the door is open to numerous unmonitored independent variables to affect either the action of the monitored variables or the mediating effects of their own interactions. This possibility of unmonitored variables in the research situation affecting observed interactions between monitored variables leads to what Snow (1977) called "locale specificity of effects" which, without further experimental controls on environmental factors, restricts our generalizations concerning either main or interaction effects to the particular sample studied. Several situations can affect the results in this way. Study samples, students, teachers, or classrooms can differ in their overall categorization on some dimension on which there is no or little variability within samples (i.e., classroom climate, teacher characteristics, neighborhood median income, etc.); student characteristics can vary by extent of range, standard deviation, or shape of distribution, as well as by their mean values (each of these affecting the likelihood of statistically significant results); and, most unfortunately, perhaps, researchers may differ in their conceptions and measurements of the variables presumably under their common investigation.

A basic limiting factor in ATI research is that it forces a search for techniques that produce flattened regression lines over the range of variability of concern. The model allows conclusions about interactions to be drawn only from comparing the slopes of simple regression lines, using one input and one outcome variable per comparison. Unfortunately, this glosses over some important sources of interactions. The model should be considered as a simple methodological application of the basic principle accepted by most educators: if outcome variability is highly related to, and is of a similar range as, input variability, then education has had little effect other than that of maintaining rank position from entry. Reducing the relationship between input and outcome variables reduces the caste character of achievement level and allows schooling a stronger influence, but it does not guarantee optimization of school learning for the individual.

There are other factors that limit the usefulness of what we know about individual differences and the design of learning experiences. Among these are:

1. ATIs are far more complex than the study of them so far would indicate. The study of these interactions has failed to take into account such factors as teacher/treatment interactions, the complexity of educational tasks as phenomena, the fact that tasks can be approached and solved with differing strategies and combinations of traits, or that the traits may function differentially across subjects and situations.

2. A part of the complexity of which we speak is to be found in situational variance. Relatively little work has been done on characterizing environments and situations and their functional properties. In addition, a few of us are only beginning to talk about the interpenetration of ecologic, personologic, and existential phenomena in situational variance. Environments, traits, and treatments have their characteristics, but they also have their meanings. It is, in part, the neglect of the influence of situations and attributions that makes difficult a better understanding of ATI.

4. Psychological and scientific works in general are based on a search for laws applicable in most instances; but in the behavioral and social sciences, and education in particular, we do not know enough about the nature and function of the specific instances to generate laws with respect to how the larger constructs, of which they are a part, operate. We may be prematurely copying the hard sciences as we try to bring comparable precision to our work, forgetting that those sciences developed over hundreds of years. During those developing years much time was devoted to the generation of descriptions and taxonomies. ATI may be in need of better descriptions and taxonomies before we proceed with further tests of its validity and utility in education.

5. We have not yet developed appropriate categories and labels by which to study ATI. We tend to identify people by qualities such as socioeconomic status, developed intellect, ethnicity, language, and sex, rather than characterizing them by such functional characteristics as specific manifestations of cognitive style, temperament, and motivation, the dynamic patterning of which tells us much about how individuals approach certain tasks or respond to specific stimulus situations.

The above factors, and still others, make difficult our understanding of individual and group differences and ultimately our appreciation of the value to pedagogy of the trait-treatment-interaction paradigm. These same factors help explain why there appears to be little empirical support for the very logical and common-sense notion that differences in human characteristics should be associated with differences in the effectiveness of different educational treatments. In addition to these methodological, operational, and technical reasons for the lack of clarity in this area, one of the reasons why the empirical evidence in support of this notion is so limited may be that the conceptual work in support of the logic of the relationship has not yet been done. As Rothkopf (1978) has observed, "It would be a mistake to expect too much from methodological reform alone. Both hands, the statistical and the conceptual, are needed to plow the field of aptitude x treatment interactions in teaching. The reasons for weak studies and incoherent results derive chiefly from our inadequate conception of the learning person. We need more psychological insights to provide us with working hypotheses about significant aspects of teaching and how they interact with personal abilities" (p. 708). The chapters that follow represent efforts at such conceptual analyses and syntheses. They are focused on the knowledge base referable to selected aspects of human diversity (human attributes) and on discussions of the possible implications such knowledge and conceptions may have for the research, design, and management of learning and teaching transactions.

Human attributes selected for the study include the following:

Social economic status accounts for that component of subjective recognition of shared similarities, a style of life, education, and the acquisition of corresponding modes of life, or prestige of birth, or of an occupation for an aggregate of individuals. The realization that socioeconomic status dictates class in a hierarchical society is an essential component of human history. For Marx, much of human history is rooted in the class struggle. It is this struggle that gives rise to class consciousness. This concept allows for the fluidity of the individual, since the subjective component of consciousness makes class an active, emergent force in history. Empirical sociologists concerned with the relationship between class and educational achievement do not give emphasis to this notion of class. Rather, they use class to designate a relatively fixed set of assumed characteristics and social hierarchical positions.

Sex and gender are often colloquially used interchangeably but are used here to refer to the biological (sex) and social role (gender) characteristics by which distinctions are made in the identification and socialization of females and males. In discussing sex differences we refer only to those characteristics that can be directly linked to the biological structures and functions of one of the two sexes, whereas gender is used in the discussion of socially assigned or adopted role functions.

Ethnicity is used to refer to one's belonging to and identification with a group that is characterized by such attributes in common as physical characteristics, cultural traditions, belief systems, language, genetic history, and so forth. Although often used synonymously with race, it does not specify biological race (Caucasian, Mongolian, or Negro) but may be used to refer to a group that shares, among other things, a common gene pool. Ethnicity may be assumed, inherited, or assigned. As used in this report, ethnicity includes the growing concern with self-interest of a group as a manifestation of ethnicity.

Culture is that complex whole that includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society. The total pattern of human behavior and its products embodied in thought, speech, action, and artifacts are dependent upon man's capacity for learning and transmitting knowledge to succeeding generations through the use of tools, language, and systems of abstract thought. As a descriptive concept, culture is a product of human action; as an explanatory concept, it is seen as influencing further action.

Language, conceptually defined, is a systematic means of communicating ideas or feelings by the use of conventionalized signals, sounds, gestures, or marks having understood meanings. In a deeper sense, however, languages are collections of symbolic representational repertoires and their appropriate milieu (setting, topic, social status of participants) for realization in speech or other communication modes.

Motivation has been traditionally defined as a personalistic variable reflecting the ability of a person to sustain effort in the absence of extrinsic rewards, or as a prompting force or an incitement working on a person to influence volition or action. It is the second definition, which gives emphasis to forces acting on a person, that better reflects the definitional emphasis utilized in this report. We see the prompting force as residing not within persons but within stimuli. The process has been reinterpreted as relying upon the acquired ability of stimuli contained within situations to sustain the performance of certain individuals.

Identity, in common parlance, refers to what stands out about a person and to how the person defines himself or herself. It has been defined as the unity and persistence of personality reflecting the individual comprehensiveness of a life or character. Here a distinction is drawn between basic and qualitative identity. Basic identity is the nonreflective state in which existence is taken for granted, or in which the sense of existence leads to feelings that all is well. Qualitative identity refers to the sense of completeness, synthesis, and continuity by which persons perceive in themselves a character of a particular kind.

Health and nutrition refer to the status of the biophysiological equilibrium of the organism in its environment. Goodness with respect to health and nutrition refers to their appropriateness for the optimal development of the immature and optimal maintenance of the mature individual.

Affective response tendency, identified in this report as temperament, is used to refer to relatively consistent patterns, characteristic of an individual, of emotional responses to a specific stimulus situation. Aspects of temperament such as characteristic tempo, rhythmicity, adaptability, energy expenditure, mood, and focus of attention are most often referred to in the literature, and are given emphasis in our discussion. However, affective responses also include processes such as attribution, personalization, projection, and cathexis.

Cognitive response tendency, usually called cognitive style, is used to refer to relatively consistent patterns characteristic of an individual in the manner and form rather than the level of perceiving, remembering, and thinking. The most commonly utilized categories are abstract and concrete functioning and field-independent and field-dependent styles. Since style connotes a higher degree of stability than is supported by the evidence, the term tendency is frequently used in preference to the term style.

Environmental press refers to the influence of living and nonliving phenomena that surround the individual. Specifically, press is what these phenomena can do to the subject or for the subject--the power that they have to affect the well-being of the subject in one way or another. There is a distinction between the press that exists objectively for a subject (alpha press) and the press that a subject perceives (beta press). The environment may be thought of as objective or subjective. The objective environment, which is emphasized in this report, can be defined to include, but not necessarilty be exhausted by, the alpha press. As developed in this report, however, it may be the attributed character (beta press) that is projected onto the environment by the perceiver that gives environmental press its special role as a determinant of human diversity.

In addition, we have included two chapters that address broader contextual issues: "On Conceptualizing Person-environment Interactions: Theory into Practice," and "Equity and the Educational Process." The report ends with two summative essays, each addressed to issues and implications from the perspectives of teaching and learning. Obviously absent from this list of concerns is a focus on differential levels of developed intellect as manifestations of diversity. We are by no means unaware of, or in disagreement with, the crucial importance of developed intelligence as a factor in the effectiveness of teaching and learning transactions. Moreover, we are persuaded that it is not a greater sensitivity to differentials in the level of developed intellect that is needed to improve the effectiveness of pedagogy or to increase the degree to which equality of educational opportunities and outcomes is achieved. Rather, what is required is greater sensitivity to and understanding of the multiple factors that seem to interact with intellect to influence its development and the effectiveness of its utilization. In that portion of our effort that is reported herein, we give primary attention to several attributes of persons, with one of our efforts specifically directed at attributes of the environments of persons. This disproportionate emphasis on personalistic variables reflects our perception of the convenience of beginning with the more fully developed area of knowledge of personal characteristics rather than with knowledge of treatments and other environments. It is more than clear that the area probably best referred to as the ecology of human development and learning demands equal study.

When this study was conceived, it seemed clear that what was needed was a better conceptualization of personal attributes and educational treatments. We set out to study those attributes singly with the realization that they are dialectically interactive in their functions. In each of the essays some attention is given to these interactions. Having completed this part of our work, it is now more clear than before that these dimensions of diversity cannot be fully understood in their isolation. It is not only in their interaction in their dynamic blending that they exist and function, but it is also in this context that they must be examined and understood. Cognitive functions are not without their affective components. Identity does not exist and operate independent of culture, language, motivation, affect, and cognition. If we were starting this effort anew, we probably would select a problem in human adaptation and learning as the topic for each essay and seek authors who, through addressing those problems, could reconceptualize the interactive multivariate nature of the diversity in the behavioral individuality of human learners. In reading and using the results of our efforts, please be advised that the isolated study of these attributes was an error of convenience and that the work should not be understood in the artificial separateness in which it is reported. We must be concerned not only with the interactions between attributes and treatments, but also with the interactions within and between attributes and within and between treatments.

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CHAPTER 1

On Conceptualizing Person-environment Interaction: Theory from Practice

David E. Hunt

Just as student diversity is a specific case of variation among persons, so matching teaching to the diverse needs of students is an example of person-environment interaction, or persons-in-relation. Thus, the major theme of this book is an educational version of the central theoretical question in psychology: How do persons interact in environments and/or with other persons? Since teachers are psychologists, too (Hunt, 1976b), I discuss in this chapter how teachers' implicit theories of the teaching-learning transaction may inform our conceptions of person-environment interaction. I do not mean that all explicit matching theories will come from teachers' implicit theories as my subtitle, "Theory from Practice," suggests; but teachers' colloquial concepts complement and inform our more explicit efforts in such a way that the relationship between theory and practice becomes reciprocal (Hunt, 1977).

Before discussing teachers' implicit theories, I review and extend earlier comments (Hunt, 1975) on conceptualizing person-environment interaction that begin with sources of resistance to such conceptualization. I do not question the difficulty of conceptualizing person-environment interaction, yet this does not alter the fact that persons interacting in environments are the basic phenomena of psychology, and thus constitute the challenge for psychological theory. How surprising, then, to discover that the Aptitude-Treatment-Interaction, or ATI, approach (Cronbach & Snow, 1977) questions the very existence of person-environment interaction by asking "Do ATI's exist?" ATI resists the challenge by denying its existence (Hunt, 1975).

ATI and Other Forms of Resistance

Rather than the solution, ATI is actually part of the problem for reasons that I discuss. Following a scoreboard technique in reviewing ATI studies, Bracht found few instances of ATI in the literature (1970), and his conclusion, like that of Glass (in Wittrock & Wiley, 1970), was that "ATI has not paid off." Jackson (1970) criticized ATI as being both unsupported by empirical evidence and impractical. Put on the defensive, ATI advocates responded by stating that the lack of interactions was "inconceivable" (Cronbach & Snow, 1979) and "astounding" (Glaser, 1972). Messick's comment seems most appropriate: "You are attempting to tally up the score when we haven't yet learned to play the game" (in Wittrock & Wiley, 1970, p. 214). I agree completely with Rothkopf (1978) in his recent review of the Cronbach and Snow book that the major defect in the ATI approach is its excessive emphasis on statistical/methodological concerns to the exclusion of conceptual/theoretical issues (cf. also Lewis, 1976). Rothkopf (1978) correctly pointed out that further understanding of matching teaching to the needs of students will not occur through increased rigor in design and analysis unless accompanied by a more adequate conception of the teaching-learning transaction.

I have discussed sources of resistance to person-environment interaction ways of thinking elsewhere (Hunt, 1975, pp. 210-216) and will summarize them here. First, this way of thinking requires more complex conceptions than either the general effects model of the experimentalist or the trait consistency model held by the individual difference psychologist. This resistance is well illustrated by a learning theorist's reaction to Snow's (1977) comments on ATI: "If you're right, I quit because this makes it all too complicated--theory becomes impossible" (p.12). Sarason (1978) provides a similar quotation from a colleague:

> I can't deal with a world where everybody has his own definition of the problem, where facts are an intrusive annoyance and of tertiary importance, where who you are is more important than what you know, and where the need to act is more decisive than feeling secure about what the consequences will be. (p. 376)

The second form of resistance is epitomized by the following comment by Glass in Wittrock & Wiley (1970):

> There is no evidence for an interaction of curriculum treatments and personological variables. I don't know of another statement that has been confirmed so many times and by so many people. (p. 210)

The complete contradiction between this comment and the intuitive experience of teachers represents a confusion between the actual interaction of persons in environments and the arbitrary definition of statistical interaction. Educational researchers, like Glass, fail to realize that their arbitrary definitions about the interaction between variables, e.g., disordinal interactions, come from the fixed world of physical objects and agriculture, not from a conception of the teaching-learning transaction or persons-in-relation. I do not propose abandoning statistical analysis, but rather that we use methods congruent with the phenomena.

Third, critics such as Jackson (1970) have maintained that ATI results may be impossible to apply in the classroom; i.e., we may know more than we can implement. This criticism may be partially accurate, but would be clarified by beginning with teachers' adaptations and trying to improve them. A teacher's adaptation need not always be to an individual student; it may occur to several students or to an entire class.

Finally, some critics have been concerned that an emphasis on student differences would promote negative stereotyping. Teachers' negative stereotypes, like unrealistic or rigid expectations, are determined more by how a teacher thinks than by information received (Cronbach & Snow, 1977, pp. 520-521). Teachers should continually monitor and update information about students; therefore, ATI information provides only the initial basis for matching. Put another way, even if positive findings of Aptitude-Treatment-Interactions were available, they would be of only limited value to teachers since such ATI results would provide only initial prescriptions. Teachers must continue to adapt as students change.

Most research on person-environment interaction investigated the effects of a fixed, nonresponsive educational environment rather than the responsive environment a teacher tries to provide. In addition to investigating the effect of static environments, ATI work almost always considers the student characteristic or aptitude as fixed and unchanging. Cronbach and Snow (1977) discussed the issue of modifiability (cf. aptitudes, pp. 161ff; 521) and concluded that there should be a balance between adapting to the aptitude and trying to improve it. However, very few studies that they reviewed focus on the development of change in student aptitude.

Person-environment interactions are expressed in ATI terms by graphs in which the person (aptitude) dimension is precisely scaled on the horizontal axis, or abscissa, by a continuum of test scores, while the environment (treatment) is dichotomized. This representation is based on a personal selection model (Cronbach & Gleser, 1965) that emphasizes placing the person in the environment in which he would perform best. From a teacher's standpoint, it would be more helpful to scale the educational environment more precisely to represent how the educational environment can be tuned to different students. Such a presentation emphasizes environmental adaptation to the student rather than student placement into an environment.

Perhaps the clearest view of the development of the ATI dilemma comes from considering Cronbach's work during the past 25 years. In his well-known APA presidential address (1957) on "The Two Disciplines of Scientific Psychology," he pointed to the need for a conceptual coordination of individual differences and environmental effects. In 1967, he

1967, he proposed that ATI provided such coordination, casting it entirely in terms of a methodological framework that he and Gleser (1965) developed in the area of personnel selection. After reviewing hundreds of ATI studies that were preoccupied with methodological issues (Cronbach & Snow, 1977), Cronbach (1975) returned to his original theme of conceptualizing the phenomena in his Distinguished Scientific Contribution Award address in which he concluded:

> The special task of the social scientist in each generation is to pin down the contemporary facts. Beyond that, he shares with the humanistic scholar and the artist in the effort to gain insight into contemporary relationships, and to realign the culture's view of man with present realities. To know man as he is is no mean aspiration. (p. 126)

Identifying Student Differences That Make a Difference

Many individual differences proposed by psychologists are remote from the real world of the classroom. To describe a student as a hostile underachiever does not inform a teacher about how best to approach that student. This gap between the description of the student and educational practice is very similar to the lack of relation between diagnosis and therapy in clinical work. Psychodiagnosticians write elaborate reports based either on fixed characteristics which are unlikely to change (i.e., stable and consistent measures), or incoherently complex characterizations of intrapsychic conflict. In either case, the characterization bears no relationship to planning the most effective treatment for the individual.

It is ironic that individual difference psychologists, in their blind emulation of the natural sciences, have insisted on consistency across time and situations as the major criterion of a measure, thereby virtually insuring that it will not index a person's differential susceptibility to various environmental approaches, therapeutic or educational. I am not advocating that measurement inconsistency is a virtue, but rather that the criteria for person characteristics are primarily a conceptual, not a psychometric, issue. To mention two examples, there have been almost no measures to characterize developmental change (let alone developmental change under varying environmental circumstances). Such measures will require a recasting (or perhaps abandonment) of traditional psychometric theory that is rooted in nonchanging consistency (cf. Cronbach & Furby, 1970 who conclude that measuring change is impossible for an extreme example). Second, the IQ measure was initially evaluated in terms of its consistency and stability. Since it was not developed within a conception of personal change and development, there is small wonder that IQ is a poor reflection of changes when they occur.

To be educationally relevant, a characteristic should indicate a student's susceptibility to different educational environments or ways of teaching; i.e., how likely is the student to learn and develop under certain environmental circumstances? I have referred to such descriptions as accessibility characteristics (1971) to which a teacher can "tune in" by varying the approach. Sensory orientation (or deficit) is perhaps the most dramatic example, but cognitive, motivational, and value orientation may also be compatibly coordinated with variations in educational approaches. For example, student Conceptual Level is an accessibility characteristic because it is related to the degree of structure that a student requires in order to learn (Hunt, 1978a). Many of the functional characteristics described in earlier chapters provide accessibility information; the test is whether the description guides identification of the most appropriate environmental (educational) approach. Glaser (1972) has called such educationally relevant characteristics the new aptitudes. Again, we may note that most classroom teachers do not need to be told such information since they are trying every day to construe their students in ways that are educationally relevant.

If the study of individual differences had been informed by common-sense psychology, terms like "accessibility characteristics" and "new aptitudes" would have been unnecessary since each of us knows this information from our everyday experience with other people. When we form an impression of another person, we usually express our reaction to that person. In a similar way, teachers usually construe students implicitly in terms of accessibility characteristics because they do not have time to consider irrelevant descriptions. Therefore, the psychology of person perception, especially when applied to teachers, may be as helpful for guiding educational adaptation as the psychology of individual differences.

The remainder of this chapter is guided by two assumptions: (a) that the major criterion of a pedagogically relevant student characteristic is the degree to which it provides information on differential susceptibility for learning and development under different educational environments; and (b) since teachers continually use this criterion, their implicit theories about students provide a valuable source of information for identifying such characteristics.

The legitimacy of such personal constructs, implicit theories, and tacit knowledge has become increasingly accepted. In psychology, George Kelly (1955) believed every person is a psychologist and that one's personal constructs are the central units for understanding one's psychological world. Fritz Heider (1958) emphasized the fundamental nature of common-sense psychology in understanding interpersonal relations and person perception. In the philosophy of science, Michael Polanyi's Personal Knowledge (1962) emphasized the importance of tacit or implicit knowledge. If we accept these notions, the appropriate strategy is to reverse the traditional theory research practice sequence and to begin with practice as the phenomenon about which to theorize and conduct research. Before discussing this strategy I review the Behavior-Person-Environment, or B-P-E, approach which I have adapted from Lewin (Hunt & Sullivan, 1974: Hunt, 1975).

B-P-E as a Way of Thinking About Interactions

I propose the B-P-E approach rather than ATI because it is based on the basic phenomena rather than on statistical/methodological assumptions. As Asch (1959) observed:

> Every field of inquiry must begin with the phenomena that everyday experience reveals, and with the distinctions it contains. Further inquiry may modify our understanding of them, but the phenomena themselves will never be displaced. (p. 379)

The fundamental phenomenon of education is the interaction of teachers with students. This is not to say that education occurs only in classrooms or that it will continue to do so, but only that this interaction is the phenomenon to be understood. There will always be disagreement on how to conceptualize teaching and learning, but agreement that the task of theory and research in education is to understand the phenomena seems a useful first step. One could argue that the most important feature of human experience is change, and that any effort to understand a part of human experience such as teaching and learning must deal with the continuously changing nature of the teaching-learning transaction.

No psychological theory can ever provide a comprehensive account of the dynamics of human experience. However, if we are continually aware of these dynamics as we develop analytic tools for understanding, we should be able to keep our ways of thinking closer to the phenomena. Sarason's (1976) observation is valuable:

> How you approach and deal with the part must be influenced mightily by where you see it in relationship to the whole; that is, what you hope to do and the ways in which you go about it are consequences of how you think it is imbedded in the larger picture. (pp. 323-324)

If we begin by noting three features of the educational experience, a student experiencing an educational approach with some kind of consequence, then these three features can be considered in terms of the familiar

B-P-E formulation of Kurt Lewin where the Behavior (educational outcome) results from the interaction of the Person (student) and Environment (educational approach). The teaching-learning transaction may be viewed from the student's, the teacher's, and the researcher's perspective by considering each in B-P-E terms. For the teacher, for example, the formula is $E{:}P \longrightarrow B$ (or what teaching approach with these students is likely to produce the desired outcome).

The B-P-E way of thinking provides an initially useful framework to consider coordinating student diversity (P) with a variety of educational approaches (E) for certain purposes (B), especially since it is applicable to theory and research as well as educational practice. In research, an independent variable (E) is applied to subjects (P) to note the effects (B).

To simply list outcomes (B), student characteristics (P), and educational approaches (E) would not illuminate the teaching-learning process, and indeed, would simply be an alphabetical rearrangement of ATI. B-P-E provides the basic units, and the way of thinking consists of arranging these units to provide some understanding of the dynamics of human experience. This way of thinking must be (a) interactively compatible, (b) developmental, and (c) reciprocal (Hunt, 1975).

I have implied the need for a person characteristic to be interactively compatible with environmental descriptions in discussing accessibility characteristics. For example, Stern (1970) described students in terms of the needs proposed originally by Henry Murray. Each need has a corresponding press, or environmental characteristic compatible with that need. Only if diversity in persons and diversity in educational approaches are conceptually compatible can their relationship be stated, e.g., the relationship between student need for affiliation and affiliation press in the environment. Descriptions of person-environment relationships such as match, fit, or congruence, require that both person and environment be characterized in conceptually comparable terms. Human characteristics vary in the degree to which they are translatable into environmental variation--i.e., the degree to which they are accessibility characteristics. For example, the status characteristic of ethnicity is not an accessibility characteristic as such since it does not literally say anything about a student's needs, but its relationship to the functional characteristic of language comprehension would provide accessibility information.

A person characteristic should not only provide information about differential reaction to environments, but may also itself be the object of modification. Thus, the characteristic should be viewed in developmental terms. Speaking of cognitive style, Messick (1970) stated:

> Consider the likelihood, however, that in our efforts to optimize the learning of subject matter we may so solidify the global child's cognitive style that he may never learn to discover anything in his entire school career. This possibility suggests that teaching to produce maximal learning of subject matter is not enough. We should also be concerned with the student's manner of thinking. One possibility here is that we should attempt to foster alternative models of cognition and multiple stylistic approaches to problem solving. (p. 197)

Matching for developmental growth, i.e., extending repertory of styles, requires frequent monitoring as well as a clear view of the value judgments in developmental matching. Some might argue, for example, that attempting to extend a student's stylistic repertory as proposed by Messick might dilute the student's strengths, and that a more advisable course might be to strengthen the student's preferred style. Using various models of teaching to define diversity in educational approaches, (Joyce & Weil, 1972), we have attempted to enhance student capacity to learn through a variety of models (Hunt, Joyce, Greenwood, Noy, Reid, & Weil, 1974). To extend a student's repertory of styles in this way seems to increase adaptation to changing environments without weakening the student's predominant mode of learning.

Because most theory and research in psychology and education has been conceptualized in the unidirectional x-causes-y framework, almost all emphasis has been on how the environment affects the person. Thus, thousands of studies have been conducted on the effects of teachers or teaching approaches on students, but only a handful have investigated how students affect teachers (Hunt, 1976a). Our ways of thinking should be reciprocal, taking account of "student pull" (Person ⟶ Environment) as well as (Environment ⟶ Person) influences. Most systems of so-called interaction analysis do not measure teacher-student interaction, but teacher's actions toward students and, occasionally, student behavior. A notable exception is the reciprocal framework for measuring classroom interaction, the Hit-Steer approach, developed by Fiedler (1975). This approach provides a basis for coding the frequency (number of hits) and success (number of steers) of influence attempts by both teacher and students.

Because earlier conceptions of person-environment interaction have dealt only with Environment ⟶ Person effects, the responsibility for the matching has usually rested with an expert or the teacher. However, when the reciprocality of person-environment interaction is acknowledged, the possibility of student self-matching becomes a possibility. In describing some alternative assumptions to the Cronbach and Snow ATI assumptions, Merrill (1975) proposed that:

> Individuals should be given some procedure enabling them to adapt the environment to themselves. The individual should make decisions about what tactic they want next rather than having this decision made for them. (p. 221)

Student self-matching implies self-assessment. Student assessment is often conducted by a psychometric expert who relies on objective testing, but rarely on the student's self-assessment. Students vary in their capacity for accurate self-assessment, but this avenue should not be ignored. As George Kelly used to admonish us in our clinical diagnostic training, "Always ask the client what is wrong--he may tell you."

The intuitive reasonableness of self-assessment has been buried under a mass of tests. However, Mischel (1977) recently remarked:

> One strand of this research suggests that the individual generally is capable of being his or her own best assessor; that the person's own self-statements and self-predictions tend to be at least as good as the more indirect and costly appraisals of sophisticated tests and clinicians. (p. 253)

It will be useful, therefore, to consider for each of the characteristics discussed how effectively students might assess themselves; at least such self-assessment information should be collected to be compared with other assessment information (cf. Cronbach & Snow's (1977) discussion of use of preferential matching, p. 170, and student preference and beliefs, pp. 476-480). When given a choice, students may not always choose most effectively, but when they understand what it is they are to assess, many students can assess themselves accurately.

Finally, a B-P-E way of thinking provides an explicit reminder that coordinating diversity among students with educational approaches requires a statement of purpose. In B-P-E terms, person-environment combinations may be considered matched or congruent in relation to specified behavior, where outcome can be immediate learning or long-term development. George Stern's (1962) well-known metaphor that aggravated oysters produce pearls while contented cows produce milk makes the point dramatically, and I have emphasized elsewhere (1975) the distinction between contemporaneous matching and developmental matching. Teachers must consider both contemporaneous matching to foster immediate learning and developmental matching to enhance growth in order to achieve a balance between the restricting effects of continuous spoonfeeding and the unrealistic demands of complete self-responsibility.

Teachers' Implicit Theories

If the student characteristics discussed in this book are to be incorporated into teachers' adaptation, they must be congruent with teachers' implicit or colloquial conceptions of their students. A psychologist's attempt to inform a teacher about a new dimension of students is very much like an attitude change effort, or the encouragement of concept development on the teacher's part. Viewed as attitude change or concept development, the psychologist's communication attempt should begin with an understanding of a teacher's current ways of thinking about students. In addition to facilitating communication between psychologist and teacher, the identification of a teacher's implicit or colloquial constructs about students may also produce a source of information of student characteristics that might otherwise have been ignored by psychologists.

Teachers' implicit adaptation and the implicit theories on which it is based have not always been accepted by psychologists. For example, Cronbach and Snow (1977) stated on the first page of their book, "Certainly the casual adaptation teachers make is not the most valid adaptation possible." Since there are almost three million teachers in North America and since Cronbach himself earlier admitted that "I know no research on impressionistic adaptation of instruction" (1967, p. 29), there seems reason to question such disregard of teacher adaptation.

To appreciate teachers' implicit matching we need to know more about how their colloquial conceptions of students influence their adaptive actions. This issue is critical to an understanding of how student characteristics are coordinated with different teaching approaches. To understand this process from a teacher's standpoint, let us begin by considering the sequence in interpersonal communication. In communicating with another person, one usually (a) begins with an intention (B); (b) perceives the other person (P); (c) communicates or acts (E); and (d) checks on effects (B). Thus, the sequence in teaching is intention-perception-action-evaluation. I have earlier used the term "reading" to describe the process of perceiving or interpreting the other person, which precedes "flexing" or modulating one's actions (1976a). Another step needs to be added between perception and action to accommodate how the intent and perception inform the action, i.e., the teacher's implicit theory, or central understandings, about the teaching-learning process.

This teacher sequence may occur in a brief time and then be repeated with readjustments required by the disparity between intention and evaluation, and thus is similar to other disparity models (e.g., Miller, Galanter, & Pribram, 1960). This sequence can be adapted to characterize the steps in a research investigation or in developing an educational program (Hunt, 1976a), as shown in Table 1. This table is a summary of a theory of teaching and instruction viewed as multiple transactions.

Table 1

Sequence of Matching Used by Teacher, Program Developer, and Researcher

Steps in Sequence	Teacher (Intentional Action)	Program Developer (Prescriptive)	Researcher (Descriptive)
State Objective (B)	Intention	Specify objectives	Identifying dependent variable
Characterize Student (P)	Perception ("Reading")	Test students and assign	Assess subjects and assign to treatments
Translate to action	Implicit theory	Explicit theory	Explicit theory
Action (E)	Action ("Flexing")	Prescribe approaches	Manipulate independent variables
Evaluation (B)	Check effects	Evaluate effects	Record dependent variables

(Adapted from Hunt, 1976b, p. 274.)

Stating the activities of developers, researchers, and theorists in terms comparable to teachers opens the way to more effective communication. As Cronbach and Snow (1977) observed, "Adaptations differ with respect to their scale" (p. 522). The teacher sequence in Table 1 is usually micro-matching or small-scale adaptation occurring in a brief time period, whereas the sequence for a program developer is macro-matching over a longer time period. Nonetheless, the framework can serve to guide communication as well as to identify disparities between viewpoints. Large-scale matching programs may facilitate teachers' small-scale matching. When students were grouped into homogeneous learning style classes, teachers became more sensitive to student differences both between and within classes (Hunt, 1978a); macro-matching may facilitate micro-matching.

To understand a person's constructs, in this case a teacher's constructs about students, we need to know (a) the content of dimensions, (b) the structure or organization of these dimensions, and (c) the malleability or openness to change of these dimensions. Investigation of the dimensions teachers use in construing their students seems such a natural and potentially important topic that it is surprising it has received so little attention. Osgood, Tannenbaum, and Suci (1958) identified the three major dimensions used in construing nonpersonal objects: evaluation, activity, and potency. There has not been a comparable distillation of basic factors in person perception. Harrison (1965) conducted studies on the Personal Description Instrument and found three factors: interpersonal warmth, power and effectiveness in work, and activity and expressiveness. Recently, several German psychologists have applied the methodology of person perception to identifying teachers' central dimensions in construing their students. For example, Hofer (Note 1) identified two major dimensions: ability and effort. Huber and Mandl (Note 2) factor analyzed free responses of teachers and found fairly complex factors: ability and effort, family background, etc.

My colleagues and I have used a variation of the Kelly (1955) Role Concept Repertory (REP) Test (Hunt, 1976a) to identify the content of teachers' constructs about their students as well as their constructs of learning outcomes and teaching approaches. Although we have not conducted a sophisticated analysis, we have used a variation of Harrison's coding system and found that the most frequently employed categories were ability, sociability, motivation, participation, and self-confidence. It should be noted that these studies emphasize psychological/sociological dimensions; important characteristics such as sex, age, language ability, and sensory limitations were not identified, even though they are important.

Teachers' content dimemsions or categories are organized in a variety of structural patterns varying from the most simple, in which all descriptions collapse into a good-bad dichotomy, to highly complex, hierarchical, interrelated patterns. Schroder, Karlins, and Phares (1973) have developed a seven-level scheme for classifying the structural organization of teacher constructs of students. The system is based on a combination of three structural features: number of dimensions, degree of discrimination, and combinatory rules.

At the simplest level of organization, a teacher views all students as falling into one of two categories, e.g., bright-dull. At the most complex level, a teacher might create a new dimension from others, e.g., combining low grades and high mechanical interest to become "unchallenged." A teacher may list several content dimensions, but they may all be linguistic variations on the ability dimension. Although the dimensions described in this book are presented one at a time, this should not create the impression that students are to be considered in terms of only a single characteristic.

Finally, teachers vary in the malleability of their dimensions. Malleability may consist of modifying old dimensions or adding new ones, or both. Borrowing from Argyris and Schön (1976), we may distinguish espoused constructs from constructs-in-use. Like the rest of us, teachers espouse or list more constructs than they actually employ in practice. For example, we have emphasized the dimension of learning style defined as how much structure a student requires (Hunt, 1975). Learning style distinguishes how the student learns from what he knows, or ability. We have found that teachers can espouse learning style verbally, but they vary considerably in how easily they incorporate it into their interactions with students; i.e., their modifiability. For example, when assessing their students on learning style, some teachers fail to distinguish it from ability. A comprehensive understanding of a teacher's implicit theory of teaching and learning would also require that the other two components--learning outcomes (B) and educational approaches (E)--be assessed for content, organization, and malleability (Hunt, 1976a).

Teachers, like students, develop in their competence and maturity as teachers, and therefore it is useful to view teachers in terms of developmental stages (Katz, 1972). Specifically, a teacher's constructs--their content, structure, and malleability--should develop with experience.

I have referred to teachers' implicit theories and described how their constructs of students can be identified. However, their implicit theories take into account the interplay of intention and perception of students on their actions, and these implicit assumptions are not easily identified. Bussis, Chittenden, and Amarel (1976) have used variations on Kelly's approach to make teachers' understandings more explicit. Barnes (1976) has suggested that teachers' implicit theories vary primarily from a transmission orientation to an interpretation orientation. For a review of research on teacher thinking, see Clark and Singer (1977). Raymond-Daly (Note 3) is investigating the idea that teacher trainees' understandings of teaching are closely related to their implicit theories of how they learn; i.e., the relationship between initially preferred teaching style and learning style. One way to attempt to identify a teacher's implicit theories is to look at how the teacher construes "meeting student needs." Some teachers think in terms of student deficits to be remedied, while other teachers think of facilitating growth. Put another way, does the teacher think of matching in terms of a preferential, compensatory, or remedial model (Cronbach & Snow, 1977, p. 170)?

Finally, some teachers become discouraged explicating their implicit ideas of student diversity because they believe it requires continual adaptation to each individual student. I have found it useful in such cases to adapt Kluckhohn and Murray's (1949) observation that:

> Every person is
>
> 1. Like _all_ other persons in some ways,
> 2. Like _some_ other persons in some ways, and
> 3. Like _no_ other person in some ways. (p. 35, italics added)

The translation into education becomes:

> Every person is
>
> 1. Like _all_ other students in some ways,
> 2. Like _some_ other students in some ways, and
> 3. Like _no_ other students in some ways.

Most teachers interpret these three levels in terms of their actions in working with students: (a) sometimes they work with the entire class, and adapt accordingly; (b) sometimes with small groups; and (c) occasionally with an individual student. This three-level scheme emphasizes that personalization need not, and usually does not, require working with an individual student. For most teachers, such personalization is possible while complete individualization is not.

Concluding Comment

Jackson (1970) stated the issue eloquently:

> Beneath almost every educational problem of consequence there rumbles the undeniable fact of individual differences and the question of what to do about them. (p. 16)

Our everyday experience tells us that each person is, as Kluckhohn and Murray suggested, like no other person in some ways. This fact of personal or student uniqueness should not lead to Jackson's conclusion that any understanding of individual differences among students is impossible, and that teachers must continue to pursue adaptation as an intuitive act.

The chapters in this book deal with characteristics applicable at the second level, or how students are like some other students. To understand a student's motivational orientation or cognitive style is admittedly only a partial description of that student, yet knowing about a student in terms of one characteristic, for instance, motivational orientation, gives a first step to understanding how to adapt the educational environment to facilitate the student's learning and development.

Returning to Sarason's quote on part-whole relation, we need to bear in mind always that each separate characteristic is only a part of that whole. Put another way, if a particular student were to be characterized in a profile of the characteristics discussed in this book, the student's pattern would very likely be unique.

Characterizing this third-level uniqueness is not simply a matter of recording ten scores or categories on a profile like an MMPI profile. What is very much needed is a complete (or whole) conception of a person within which each part can be construed. For example, Ossorio (1973) has proposed that an adequate (whole) conception of a person must include at least:

1. Who is the person? (identify)
2. What does the person want? (intention)
3. What does the person know? (knowledge)
4. What does the person know how to do? (competence)
5. What is the person trying to do? (action)

We might add, based on observations in this book, "How is the person trying to do it?" (style). If you stop and think about how you form an impression of a person whom you meet briefly for the first time, these seem intuitively reasonable. Like Sarason, Ossorio maintained that each part must be considered in relation to the whole, rather than that all parts be understood simultaneously. As the chapters in this book suggest, there may be other parts to be considered, and this building of a whole conception of a person is a challenge for future theorists and researchers. For now, it is less important that we know all the parts than that we acknowledge that several parts must be considered and that the relationship between the parts is critical to understanding a person. How a change in intention affects one's knowledge and vice versa are central issues.

I have adapted Ossorio's conceptions to characterize persons-in-relation, or specifically, teacher-student-relations (Hunt, 1978b, 1978c, 1978d) as the relationship between the theorist/researcher, the teacher, and the student as shown in Figure 1.

I realize that Figure 1 is highly speculative and far beyond our present capacity for measurement. Yet I believe it important to attempt such a comprehensive conception of the participants. This diagram emphasizes several points:

1. Each part must be considered in relation to the whole and the relation between parts understood.
2. Relationship between theory and practice is best considered in terms of persons-in-relation, between theorist/researcher, teacher, and student.
3. Relationship between theory and practice is reciprocal, not only between theorist and practitioner (teacher) but between theorist and client (student).
4. The teaching-learning transaction is reciprocal between student and teacher.

Figure 1 amplifies Table 1 by emphasizing that the student is an important participant and that the student's perception of himself and of the teacher are important ingredients to be understood. In short, I believe that an adequate understanding of matching is most likely to come from a comprehensive theory of persons-in-relation. As Mischel (1977) stated:

> Ultimately, the study of individuality will have to deepen our understanding of how people abstract the "gist" of each other and themselves, of how they form schemata, expectations or other cognitive representations. (p. 252)

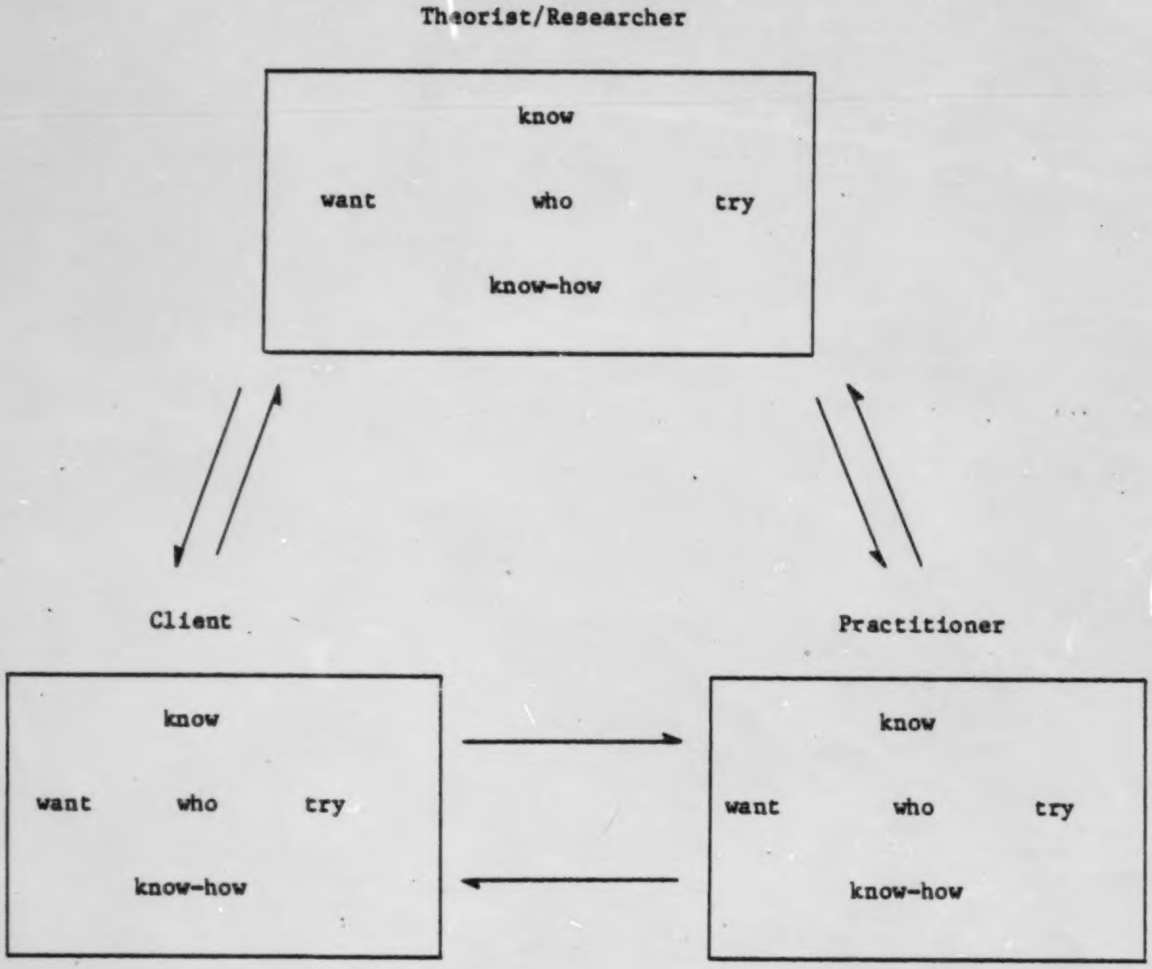
Theorist/Researcher
know
want
who
try
know-how
Client
know
want
who
try
know-how
Practitioner
know
want
who
try
know-how

Figure 1. Interrelation among client, practitioner, and theorist/researcher. After Hunt (1978(d).

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CHAPTER 2

Equity and the Educational Process

Robert Glaser

The purpose of this chapter is to show that attainment of equal opportunity in education will require changes in the educational process--teaching practices, classroom organization, and the management of instruction. For the most part, when concern about the equality of educational opportunity has been expressed, this aspect of schooling has been deemphasized. Instead, attempts at controlling the input to schools through entrance examinations, desegregation procedures, and open admissions plans (Coleman, 1968, 1975; Hawkins, 1977; Mosteller & Moynihan, 1972) have as their premise the notion that major changes in the outcomes of education will be more a function of selection and placement than of the process of instruction.

It has been assumed that teaching practices need little change even though significant changes take place in the composition and requirements of the student body. This assumption is no longer viable in today's educational climate. Not only broader access to education, but also the need to attain higher levels of achievement make it increasingly difficult to require that a diverse student population conform to a standardized educational process. The neglect of process change is painfully apparent when no consequent change in educational process follows changed college admission standards or a changed student population in an inner-city high school. If achievement levels are to be maintained and improved, then as input to the system changes, the process characteristics of the system must also change. The process characteristics of central interest here are those that determine the degree of flexibility within the educational system, and the system's ability to adapt to individual diversity in aptitude, socioeconomic background, culture, and the skills of learning and coping with schooling.

The key ideas presented in this chapter are further explicated in the author's book entitled, Adaptive Education: Individual Diversity and Learning. New York: Holt, Rinehart & Winston, 1977. Its preparation has profited from the work of Joan Jewell of the University of Pittsburgh in an earlier draft.

The issue of creating environments for learning more adaptive to individual needs than those generally provided by schools at the present time will be discussed in this chapter from four perspectives: first, a discussion of a psychology of learning that has fostered a selective, relatively inflexible educational process that is in contrast to modern psychological thinking that mandates more individualization of the learning process; second, a general description of patterns of education that offer various kinds of selective or adaptive environments for learning; third, suggestions for school management and teaching practices that can possibly contribute immediately to classroom capabilities for providing more flexible environments for learning; and fourth, examples of the kind of research and development needed to assist in the above work so that new knowledge and information about school effectiveness can contribute to the design and implementation of educational programs that meet the rich variety of student needs for learning.

Psychology and Education

The psychology of learning and human development has always been a part of teacher-education programs, and the beliefs about human behavior that are transmitted to teachers directly or indirectly affect our schools. In this regard, this section examines older and newer psychological notions and their implications for the design of educational environments adaptive to individual differences. The discussion is not intended to capture theoretical subtleties; instead, it is intended to highlight the ways in which these conceptions are distilled into educational principles and practices.

How do commonly held psychological beliefs about the learner and learning enter educational practice? They are infused into educational lore by textbooks based on dominant educational theories, and by professors of education in colleges that train teachers. Even though conceptions of the learner and learning are changing, lag time from the expression of these new ideas in texts and courses to observable change in practice is very great. The old conceptions may no longer be widely held, but they are fixed in practice. Hence, in order to define new modes of education, it is a useful exercise to match beliefs about the nature of human development and learning with the practices they nurture. Further, it is appropriate to examine the mismatch between educational practice and new developments in our knowledge about learning. To begin this examination, we shall contrast old and prevalent conceptions of the nature of the learner with new thinking. The following contrasts can be made:

1. Older psychological conceptions that influence current educational practices have tended to view human beings as having consistent and relatively fixed general drives, dispositions, and traits. In contrast,

newer data on ecological and cultural influences require that individuals be viewed as being highly adaptive to surrounding conditions and environmental demands.

2. The picture of learning through the relatively passive formation of stimulus-response connections, encouraged by old-fashioned psychological theories, has shaped instruction in our schools. Modern psychology, in contrast, now conceives of the human as an active processor of information and environmental events.

3. The prevalent educational conception of individual differences in aptitude has been derived from the technology of psychometrics and standardized testing; this work has emphasized the measurement of individual differences as entities predictive of success in school and work environments. Individual differences in abilities and aptitudes as they relate to education are now being conceived in terms of cognitive processes (intellectual and affective) that can be utilized and developed to facilitate learning and performance.

Each of these three points is elaborated in the following pages.

Constant Traits Versus Plasticity and Adaptability

Older conceptions of the learner rested on two related beliefs: that human beings have consistent and persistent general dispositions or traits, and that their intelligence is an immutable capacity determined by genetic inheritance. People were viewed as having a certain type of personality (e.g., introvert or extrovert) or as having certain personality traits (e.g., unsociable, passive, and pessimistic; or sociable, active, and optimistic). These broad underlying dispositions were believed to pervasively influence an individual's behavior and lead to consistency in that behavior across situations.

In contrast, newer conceptions emphasize that humans have evolved with a fundamental distinctiveness for trainability, educability, and plasticity of behavior through learning and cognitive growth (Bem & Allen, 1974; Dobzhansky, 1973; J. McV. Hunt, 1961; Mischel, 1973). Recent work in psychology emphasizes that humans are very malleable as a function of learning and diverse environmental conditions, and documents the relatively specific environmental influences upon behavior. Individuals do show generalized, consistent behavior on the basis of which they are frequently characterized as having certain personality traits; but they are also very good at reacting to a variety of situations and experiences in different ways. Older theories of personality err in assuming too much consistency in individual behavior and in deemphasizing the capability of individuals to devise plans and actions depending on the needs, demands, and rules of varying situations (Mischel, 1973).

Situational adaptability is evident in the newer research on intelligence. The specific capabilities of humans are acquired in the surrounding media of a culture. The capabilities or intelligences developed may be relatively specific to the particular context in which learning occurs. An example of research that demonstrates man's responsiveness to the environmental context is the experimental psychoanthropological work of Michael Cole and his associates (1971). One conclusion of these investigations is that observed cultural differences in cognitive processes derive more from experience in situations to which particular cognitive processes are applied than from the existence of a process in one cultural group and its absence in another. If this is so, then educational psychology and education should attempt to determine the life conditions under which various processes are manifested and should then develop procedures that capitalize on and foster those processes to maximize learning in educational settings.

The Passive Versus the Active Learner

Older psychological theories provided a relatively passive picture of memory and mental events that consisted essentially of the acquisition of stimulus-response associations (Hull, 1943; Skinner, 1953; Thorndike, 1922). This concept of the passive learner produced methods of instruction that stressed rote memorization, with a reliance on repeated exposure to specific stimuli as the basis for acquiring information. Current work in psychology is making it increasingly clear that humans are active processors of environmental events and information; they employ developed strategies to remember and utilize knowledge of events. It is apparent that acquiring information, learning subject-matter skills and solving problems within the context of a subject matter area, must be treated as active, constructive cognitive activities. Examples of research that supply evidence of the dynamic properties of cognitive processes will be found in the work of Bransford and Franks (1971) and Estes (1974).

The active nature of memory presents a view of the nature of learning that contrasts with classical studies of learning. Learning and memory are now seen as integrative processes in which there is constructive interaction between the individual and events that are encountered in the world. As an individual learns, there is a continual evolution of the structures of knowledge stored in one's memory and the nature of these structures affects the way in which new information is acquired. Individuals build up different conceptual structures as a result of their different experiences, and hence, they can be expected to bring their knowledge to bear upon new learning in different ways.

Environmental differences can produce different kinds of memories in individuals, even though the underlying psychological processes for storing, interpreting, and remembering information may be common to all people (Gagné & White, 1978; Lindsay & Norman, 1972, chapter 11).

Aptitudes as Predictors Versus Aptitudes as Cognitive Processes

The nature of psychological testing and its underlying discipline of psychometrics has led to particular discontinuities between past and current thinking about the way in which individual differences are viewed and measured for the purposes of education. These discontinuities can be seen in terms of two major themes--the notion of psychometric prediction and the notion of aptitude as a fixed characteristic (Cronbach, 1975).

The aptitude test tradition has been uniquely oriented toward establishing some measure of an individual's current performance that predicts later achievement within the environments for learning generally available in an educational system. In our commonly used aptitude tests, items are chosen primarily for this predictive power. Less emphasis is placed upon identifying individual differences in those intellectual processes that can be related to the different educational environments that individuals require (Angoff, 1971; Carnegie Council on Policy Studies in Higher Education, 1977; Schudson, 1972; Tyler, 1976).

Today, this situation is changing. Psychology has shifted its position to a view that emphasizes the development of cognitive processes. Competent performance is seen in relation to the identification of malleable processes that contribute to it and not as something only to be predicted. What is being studied now is the way in which individuals might be educated to improve their cognitive skills, making the attainment of competent performance easier and more effective. Recent definitions of intelligence and aptitude have stimulated a plethora of research on the effects of instruction on the underlying processes involved. Piagetian theory and cognitive theory in general emphasize matching the child's level of cognitive development with life experiences. These effects are not concerned with differential prediction. Instead, they emphasize developmental changes in processes that influence performance. This view of cognitive processes as influenced by an individual's learning and development suggests that identifying the differences in individual capabilities to use these processes is a requisite of effective education. The conditions required to learn school tasks could then be adapted to these differing individual characteristics; the individual can also be taught how to engage more effectively in these processes in order to profit from the kind of learning opportunities provided. At the present time, investigation is being carried out on the extent to which aptitudes and abilities, including the kinds measured on psychological tests, are modifiable and subject to educational influence (Estes, 1974; Glaser & Resnick, 1972; E. Hunt, Frost, & Lunneborg, 1973; Pellegrino & Glaser, in press).

The change required is not only that we identify human talents and explicate cognitive processes, but also that we adopt a change in tactics. The old aptitude concept primarily permits measurement of the ability of an individual relative to others, and this measurement provides a few clues about educative processes. Hence, it suggests little more than to treat people as if they have or do not have an aptitude. In contrast, a new concept of aptitudes--one that emphasizes performance processes--could offer possibilities for educational modifications and adaptations to increase individual accomplishments through the development of abilities for successful problem solving and the availability of opportunities for personal growth.

Effects of Past Psychological Conceptions on Educational Practice

The preceding brief review of contrasting conceptions of the learner provides a framework for considering the ways in which these conceptions relate to educational practice. The overemphasis of the consistency of general traits and the de-emphasis of the adaptivity and plasticity of human behavior have resulted in the establishment of relatively fixed environments in which education takes place. In essence, once an individual is characterized according to a general potential or disposition, he or she is placed in the educational setting suited to his or her "nature," and there is little reevaluation of the match between the individual and the environment for learning. This imposed rigidity offers little opportunity for individuals to influence their environment so that it can accommodate their individual requirements (Dewey, 1900, 1902/1964, 1938/1973; Thorndike, 1911).

Although the continuous interaction between individual performance and environmental conditions changes both behavior and the environment, the implicit potential of this cannot be realized in the context of the unyielding environment of most present-day schools. Furthermore, by emphasizing the passive organism establishing associative connections and deemphasizing the human being as an active processor of events, the prevalent model of teaching has essentially become the direct transmission of oral or written information from the teacher or a book to the learner. Models of instruction in which teaching is conceived as an enterprise with active construction of information in a problem-solving fashion are relatively less common.

The usual notion of aptitudes as predictors rather than as assessments of current capabilities overemphasizes categorical placement of an individual in a particular educational track and precludes the acceptance of responsibility by the educational system for influencing or adapting to initially assessed performance. This classificatory tactic fails to account for different talents that could enable different individuals to profit optimally from their school experiences.

In general, then, prevalent psychological conceptions of the learner, as filtered through schools of education into school practice, have buttressed a selective, limited-alternative mode of schooling, characterized by minimal variation in the conditions under which individuals are expected to learn. A relatively narrow range of instructional options is provided, and the number of ways to succeed is delimited. Consequently, the adaptability of the system to the student is limited to these options, and the availability of alternative paths that can be selected for or by students with different backgrounds and talents is restricted. In such an environment, the available options require particular student abilities, and these particular abilities are emphasized and fostered to the exclusion of other abilities. In this sense, the system becomes selective with respect to individuals who have those abilities required for success--as success is defined and as it can be attained by the means of the prevailing instructional conditions. Little change in the educational environment is necessary, since only those students who have a reasonable probability of success are effectively admitted into the mainstream of education.

In contrast to the above mode, newer psychological concepts recommend more adaptive educational modes that can provide for a range and variety of instructional methods and opportunities for success. Breaking out of the confines of the selective, limited-alternative mode of schooling requires that we examine contemporary conceptions and their implications for the design of new flexible environments.

Design of Adaptive School Environments

An adaptive mode of education assumes that the educational environment can provide for a wide range of instructional methods and opportunities for success. Alternate means of learning are matched to students on the basis of knowledge about each individual's background, talents, interests, and past performance. This requires that each individual's abilities and styles are assessed, both upon entrance to and during the course of learning, and educational paths are elected or assigned. As learning proceeds, information is obtained about the learner which is used to select subsequent alternate learning opportunities. The defining characteristics of the adaptive mode are: (a) the primary role of the student's current performance in determining the subsequent nature of the educational setting, and (b) the constant evaluation of the match between individual performance and the educational environment.

The success of this adaptive interaction is determined by the extent to which the student does indeed experience some kind of match and challenge between his specific abilities and interests and the activities in which he engages. An adaptive school environment attempts to carry out this matching of children's abilities to alternate ways of learning. In the course of accomplishing this, it also attempts to bring the students' abilities into a range of competence that will enhance their potential to profit from the available instructional alternatives. Adaptive interaction between abilities and activities that leads to learning occurs in several ways: (a) by school programs that relate to and encourage an individual's competencies and interests, (b) by preparatory programs that develop the knowledge and skills required by an individual to take advantage of available opportunities for learning, and (c) by learning situations that facilitate development by providing conflict (in the Piagetian sense) between an individual's available knowledge and skill and the competence required for the appropriate solution of problems.

In any form of education, selective or adaptive, the differences between individuals that take on importance are those abilities that have survival value within the system. As a consequence, it can be anticipated that in adaptive and interactive educational settings where there is room for adjustment between abilities and modes of learning, wider ranges of abilities can be accommodated and new capacities can be developed and utilized. What is required is the design of new environments flexible enough to provide the give-and-take necessary to reach out to most learners in order to optimize cognitive growth and the development of competence (Benjamin, 1949; Cronbach, 1967; Glaser, 1968, 1972, 1977).

The general task of designing adaptive educational environments must take account of both intellectual skills and idiosyncratic cognitive styles. The following set of questions needs to be addressed:

1. How can knowledge of an individual's competence and modes of performance be matched to and challenged by the method, content, and timing of his or her instruction?

2. How can the educational environment be adjusted to an individual's particular talents and particular strengths and weaknesses?

3. How can an individual's abilities be modified and strengthened to meet the prerequisite demands of available means of instruction and available educational opportunities?

It is technically demanding to design and build flexible educational environments that include the necessary teacher, administrative, and material needs. But research, development, and implementation toward these ends is what new conceptions of the learner recommend. As Dewey said in his book Experience and Education (1938/1973):

> The trouble with traditional education was not that educators took upon themselves the responsibility for providing an environment. The trouble was that they did not consider the other factor in creating an experience; namely, the powers and purposes of those taught. It was assumed that a certain set of conditions was intrinsically desirable, apart from its ability to evoke a certain quality of response in individuals. This lack of mutual adaptation made the process of teaching and learning accidental. Those to whom the provided conditions were suitable managed to learn. Others got on as best they could. (pp. 45-47)

Patterns of Adaptation

A particular pattern of formal education can be described by the configuration of instructional alternatives provided and the procedures by which decisions are made about students--by themselves, their teachers, or their counselors. Some educational systems provide relatively few alternatives for getting through the system, and the primary decision to be made is whether a student is or is not suitable for the relatively fixed program. Other educational systems offer more alternatives by providing for different educational goals or by making available various instructional procedures for the attainment of competence. The combination of available alternatives provided in systems of schooling and the decision-making procedures used to place individuals in these alternatives are the fundamental characteristics by which educational enterprises can be described and analyzed. These characteristics will be the foci in attempting to formally describe the ways in which educational environments can adapt to individual diversity.

Five models of educational enterprises will be discussed, with particular emphasis on the structure of decisions and alternatives (Glaser, 1976). The various models are represented by flow diagrams that show the questions asked at decision points and the possible resulting outcomes as a student progresses through the school years. When such models are written as flow diagrams, they are only sterile skeletal structures of the educational process; but restriction of the models to certain essentials serves to draw attention to key aspects, which can then be elaborated. Using conventional flowchart notation, diamond-shaped boxes represent decision questions, and rectangles represent alternative outcomes or the state of an individual at a particular time. Various past and present school practices through which adaptation to individual differences has taken place are described in the context of these models. Although we describe these models separately for the purposes of explication, they are not mutually exclusive and are combined in a variety of ways at different levels of education.

Model One: Selective with Limited Alternatives

Consider the first model in Figure 1. Individuals come to an educational setting with particular abilities and talents; we call this the "initial state of competence" (Box A). Through teacher judgment or more formal tests of readiness and scholastic aptitude, the characteristics of this initial state are assessed in B. On the basis of this assessment, a decision is made either to place an individual in the standard educational environment, D, for which particular abilities are demanded, or to designate the individual as a poor learner, C, for whom some special treatment is required or for whom the educational system is inappropriate. For those placed in the standard system provided in D, an assessment of a state of attained competence is made at E at certain designated times, with the resulting consequences available at F and G--repeat or fail, or award credential of graduation.

Of course, in practice, this stark model is overlaid with less drastic routines; but for the moment, consider it as given here. The activity carried out in D is generally limited in the alternative modes of learning provided so that the particular abilities assessed, selected, or attended to in B are those individual competencies that are emphasized and fostered in D to the exclusion of other possible abilities.

Thus, at B, we monitor the abilities required for learning in the environment provided for attaining the competence assessed at E. The success of the system (that is, maximizing the number of students with credentials at G) is realized by admitting those individuals who display at B a relatively high performance in the abilities required to succeed in the given educational environment. Because only those individuals who have a reasonable probability of success in achieving an award at G are seriously considered for entry into the system, the particular educational environment provided at D can be maintained, and little change in the educational environment is necessary. For the purpose of decisions about individuals, then, those abilities are assessed that predict success in this particular environment. Model One thus depicts a system like the one discussed earlier--a

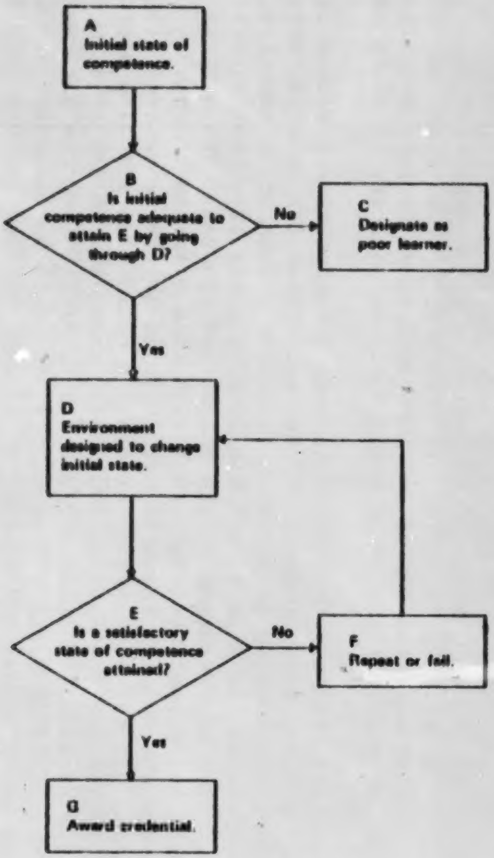

A
Initial state of competence.
B
Is initial competence adequate to attain E by going through D?
No
C
Designate as poor learner.
Yes
D
Environment designed to change initial state.
E
Is a satisfactory state of competence attained?
No
F
Repeat or fail.
Yes
G
Award credential.

Figure 1. Model One: Selective with limited alternatives.

relatively uniform, limited-option program with fixed instructional goals and sequential selection of students.

Model Two: Development of Initial Competence

Consider now a second flow model, Figure 2. It has the same characteristics as Model One: an entering gate, an environment for learning, and measures of attainment. At B in Model Two, however, not only is there an assessment of individuals with respect to the presence or absence of abilities that allow them to pass through the entering gate, but there is also some diagnostic decision made about the nature of the abilities tested. For those individuals whose state of initial competence does not allow them to pass immediately through the gate, an educational environment is instituted (H) to develop their competence to the point (I) where they can pass through the gate, or to the point where it can be assumed that these entering abilities will be developed further after gate entry. In this way, through some combination of prior and continued monitoring and instruction, entry gate abilities are modified so that the number of individuals who succeed is maximized.

In practice, one way in which this mode of adaptation operates is by temporarily pulling some students off the mainstream for remedial work. Supplementary instruction is provided to repair a lack of information, a lack of motivation, or gaps in skill. Once students have been brought up to "level," they are returned to the mainstream program. The typical pattern is a major instructional track with side branches in which the knowledge and ability required for learning in the mainstream program are provided. If for some reason or other a child does not have appropriate readiness skills for the options available, these skills may need to be taught. For example, in order for a child to profit from the alternatives that are available in reading instruction, it might be necessary to teach some of the basic visual and acoustical process skills that are required for decoding words. If certain self-management skills are necessary for instruction to proceed well in a preschool classroom, these might be taught.

The development of initial competence is a form of adapting to individual differences in circumstances in which instructional alternatives are limited and the child must develop the prerequisite skills and knowledge in order to profit from available alternatives. When this mode of adaptation has been advocated in the modern forms of compensatory education proposed for disadvantaged young children, the hope has been that appropriate stimulation and remedial instruction will develop the intellectual skills, knowledge, and attitudes that will provide the readiness required for the mainstream track of primary schooling.

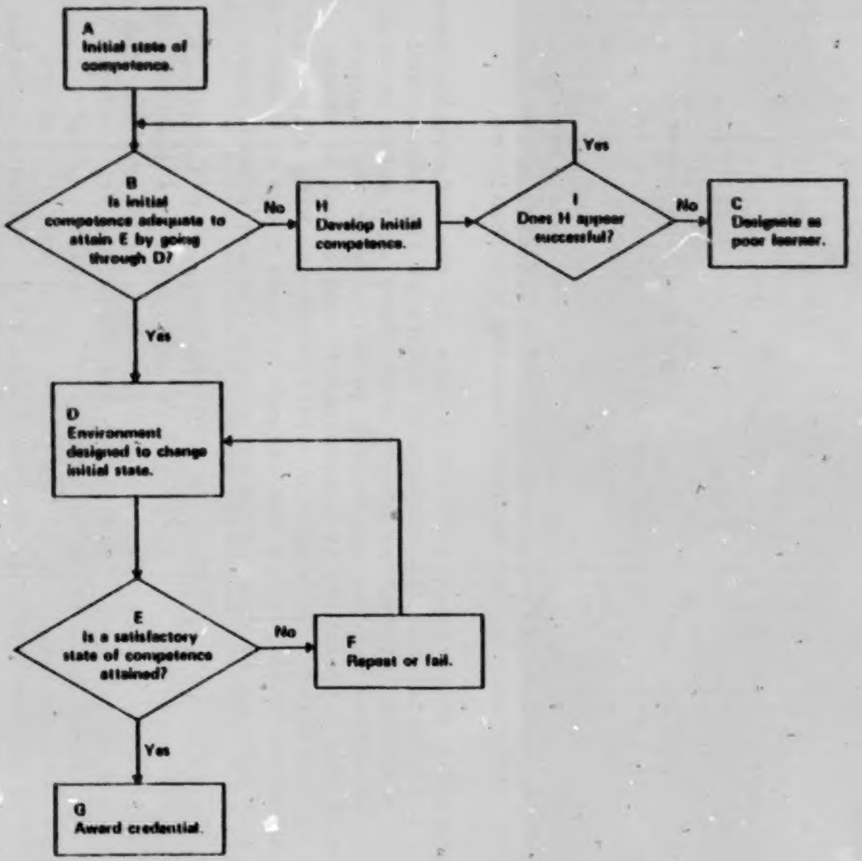

A
Initial state of competence.
B
Is initial competence adequate to attain E by going through D?
No
H
Develop initial competence.
I
Does H appear successful?
Yes
No
C
Designate as poor learner.
Yes
D
Environment designed to change initial state.
E
Is a satisfactory state of competence attained?
No
F
Repeat or fail.
Yes
G
Award credential.

Figure 2. Model Two: Development of initial competence.

Model Three: Accommodation to Different Styles of Learning

Model Three, shown in Figure 3, attempts to respond to the limitations of Model Two by providing alternative, flexible instructional environments that accommodate to different learners' abilities. Model Three provides educational alternatives in the form of a variety of educational environments and instructional methods (D_1, D_2, D_3, . . . D_n). In this model, procedures for passing through the entering gate are different from those of the previous models in which there is only a single path through the system. In the educational setting outlined in Figure 3, the attempt is made to match individual abilities to one or more of the environments provided. Individuals who can initially succeed in any one of the environments pass through an entering gate. This model assumes that alternative means of instruction are adaptive and are in some way matched to the abilities of different individuals. It may be assumed that this matching process occurs not only at the entering gate, but also continuously during the course of learning. As information is obtained about the learner, decisions are made to enhance probabilities of success in alternate instructional environments with various learning opportunities.

A significant property of this third model is the interaction between a learner's performance and the subsequent nature of the educational setting. An adaptive interaction occurs when there is a match between an individual's abilities and the activities in which he or she engages. The success of the interaction is determined by the extent to which attainment is maximized. This ability-environment matching also takes place in the second model, since the attempt is made there to teach the abilities that enhance attainment in the single available environment.

In both Models Two and Three, through the pattern of decisions made about individuals and the alternatives available, the institution adapts to individuals rather than, as in Model One, requiring individuals to adjust to the institution. Models Two and Three differ, however, in that Model Two attempts to bring an individual's abilities into a range of competence that enhances his or her potential to profit from the available instructional setting, whereas Model Three attempts to match individuals' abilities to alternate ways of learning and to adapt to individuals by altering instructional procedures.

An example of one way in which the third model is realized in practice is the way in which an effective teacher will acknowledge and adjust to the differences among pupils in a classroom by providing alternate instructional paths. Good teachers adapt to individual differences in a great variety of ways. The teacher functions as a diagnostician by observing students' informal performance and formal test performance as well as by picking up cues from other observations. On the basis of these assessments, the teacher makes instructional decisions and alters a

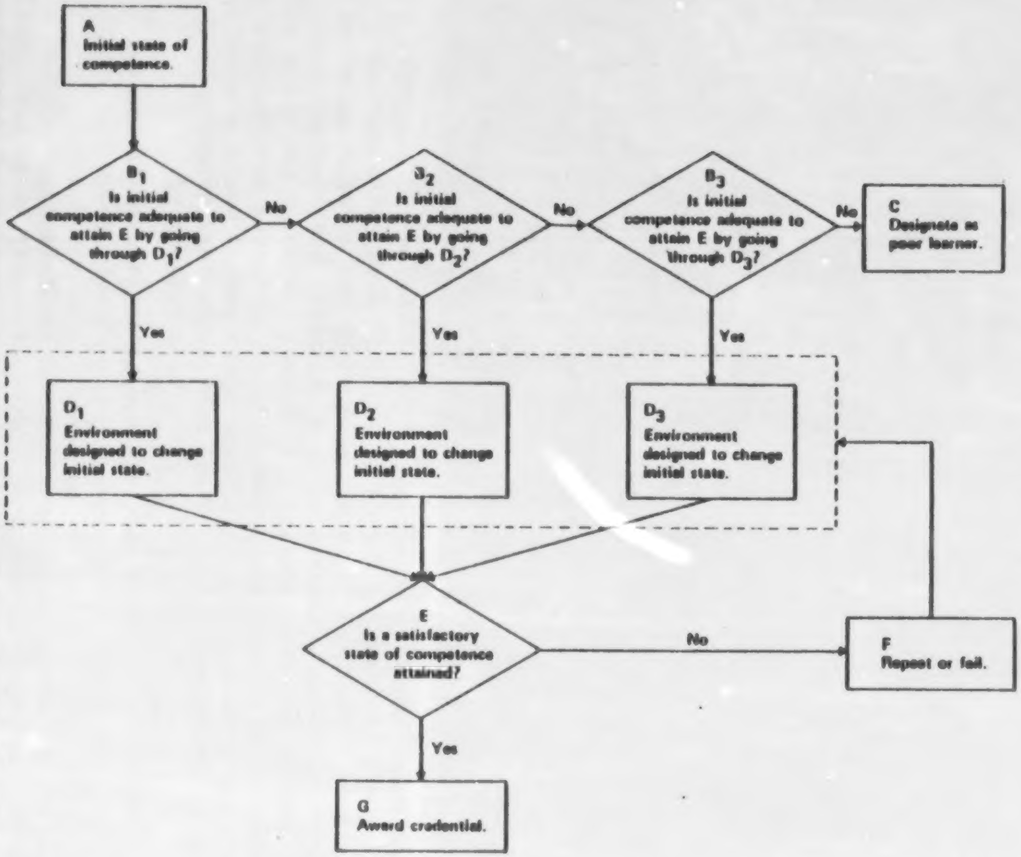

A
Initial state of competence.
B1
Is initial competence adequate to attain E by going through D1?
No
B2
Is initial competence adequate to attain E by going through D2?
No
B3
Is initial competence adequate to attain E by going through D3?
No
C
Designate as poor learner.
Yes
Yes
Yes
D1
Environment designed to change initial state.
D2
Environment designed to change initial state.
D3
Environment designed to change initial state.
E
Is a satisfactory state of competence attained?
No
F
Repeat or fail.
Yes
G
Award credential.

Figure 3. Model Three: Accommodation to different styles of learning.

student's instructional program on both short-term and long-term bases. This procedure by which instructional methods are altered for different students is based on the teacher's experience and intuitive expertise, and decisions made in this way are no doubt beneficial to students and adaptive to their requirements. Nevertheless, it is a difficult task. Under various circumstances, these decisions may be inefficient and, at times, maladaptive and incorrect for appropriate guidance of student learning and motivation. Sometimes, students may be written off and allowed to just mark time, either because they do not have the prerequisites to work at the level of difficulty of the class, or because the teacher is not prepared to teach at their level.

While this adaptive process depends upon the skills of expert or mediocre teachers and is more or less difficult depending upon the student population, it is always influenced by the tools, procedures, and organizational flexibility available to the teacher and to the school instructional staff in general. The process can be improved by appropriate diagnostic tests, by the availability of a wide range of instructional situations, and by organizational and technical arrangements for individualizing instruction so that the process of individualization is more adaptive to student differences than is now possible in most schools.

Model Four: Development of Initial Competence and Accommodation to Different Styles of Learning

A fourth model considers the combination of the second and third models; this model is shown in Figure 4. In this case, attainment is maximized both by improving abilities required by the entering gate and by providing multiple environments so that abilities and instructional environments can be matched. In any actual realization of the third model, one could only assume a reasonably small set of alternate environments and the abilities required for these different environments would need to be developed as in the second model. These alternative environments (represented by $D_1, D_2, D_3, \ldots D_n$) refer to a variety of conditions that foster learning and that can be matched to individual requirements.

Alternative environments for learning can be implemented at the present time by changes in school practices. In no way is an individual fixed in any one track; there can be movement across these alternate environments as the individual develops the skills useful to learn in each context. In practice, Model Four--a combination of Model Two (development of initial competence) and Model Three (accommodation to different learning styles)--is necessary for adapting to various individual differences (e.g., slow or fast learners, learning-disabled or very bright, and mainstream or minority backgrounds).

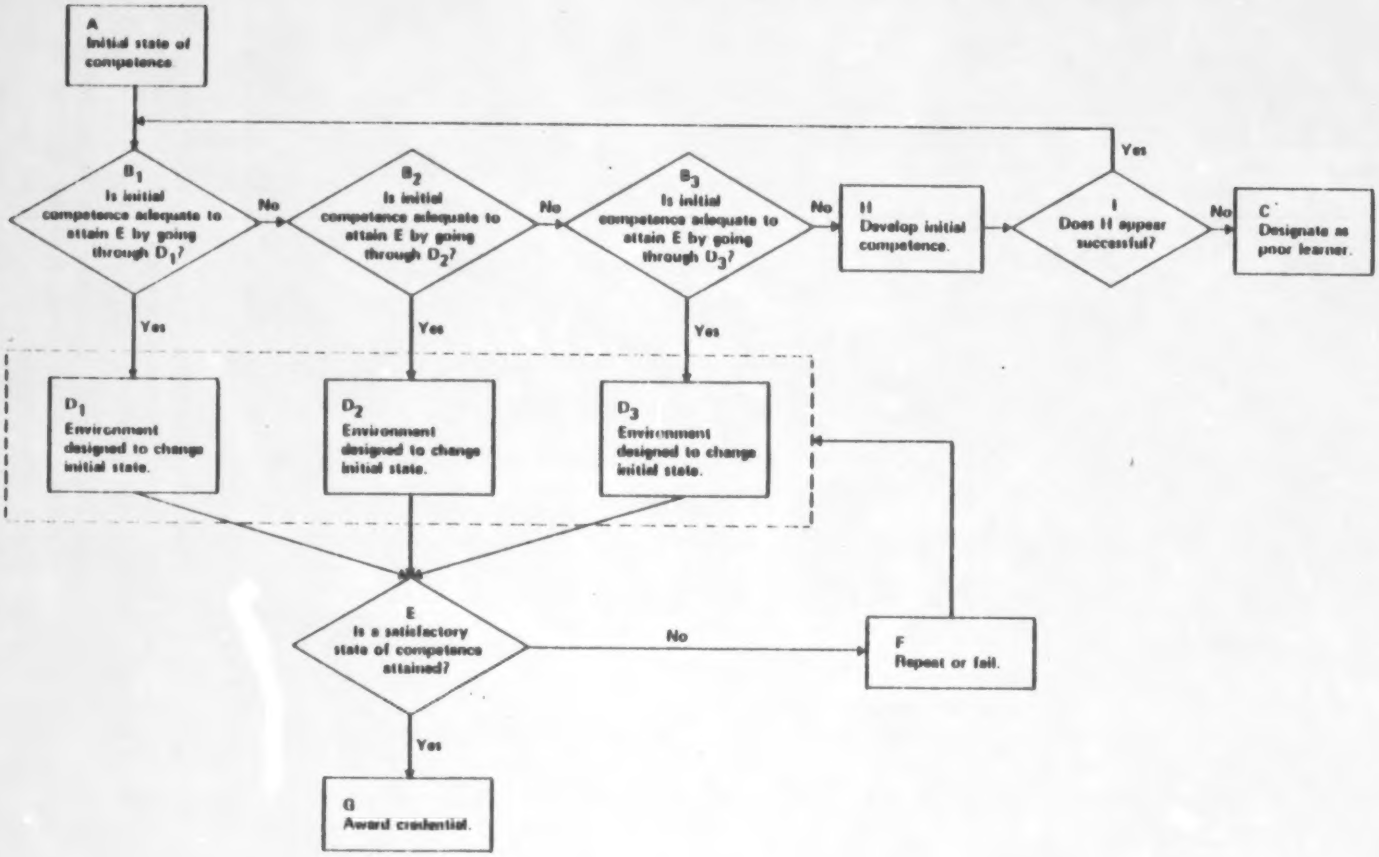

A
Initial state of competence
B1
Is initial competence adequate to attain E by going through D1?
No
B2
Is initial competence adequate to attain E by going through D2?
No
B3
Is initial competence adequate to attain E by going through D3?
No
H
Develop initial competence.
I
Does H appear successful?
Yes
No
C
Designate as poor learner.
Yes
Yes
Yes
D1
Environment designed to change initial state.
D2
Environment designed to change initial state.
D3
Environment designed to change initial state.
E
Is a satisfactory state of competence attained?
No
F
Repeat or fail.
Yes
G
Award credential.

Figure 4. Model Four: Development of initial competence and accommodation to different styles of learning.

Consider the cultural differences. To ensure the benefits of effective education for all children, adjustment must be made to accommodate the fact that the culture in which young children develop determines to a significant extent their language, the kind of information they acquire, the techniques they use for processing information, their skills for learning to learn, and their themes of interest, as well as the values and behavioral styles present when they enter and continue in school. When mainstream and minority cultures exist together in a pluralistic society, the demands of a particular school program and the more general school environment may be continuous or discontinuous with the competencies and values that a child brings to school.

"Cultural deprivation" or "disadvantagement" is then operationally defined in terms of a discontinuity between what the individual and the culture expect of the school and what the school requires. Conventional mainstream schooling, for example, explicitly or implicitly requires immediate acceptance of an achievement ethic with deferred future rewards --a characteristic most consonant with middle-class, mainstream values. For a child coming from a culture emphasizing other values, this discontinuity may have a profound effect on the child's behavior toward school and the school's behavior toward the child. In an educational environment that offers options for learning, such values and styles--from whatever source they arise--would be assumed to be competencies of intrinsic worth that have been extremely functional in the child's environment. These competencies can then be treated as the child's assets and can serve as a basis for designing a program of education.

The "disadvantaged" perspective can occur only when educational programs are restricted to limited instructional modes that make particular learning styles and particular initial competencies take on special importance. In contrast, developing the learner's initial competencies to succeed in available instructional programs, as well as providing flexible instructional alternatives, increase the likelihood of success for each child. The attainment of desired school outcomes is more likely because the environment reaches out in many ways to the broad range of competencies in different children (Pifer, 1977).

Model Five: Alternate Attainment Possibilities

Model Five depicts a complex attainment system, in contrast to the simple attainment systems represented by the previous models. A complex model contains different educational outcomes (E_1, E_2, E_3, . . . E_n), as shown in Figure 5. In simple attainment systems, the educational goal is to teach the basic literacies to all students--as is the emphasis of elementary school. Complex attainment systems would be more predominant in higher education. In general, throughout the educational span, complex

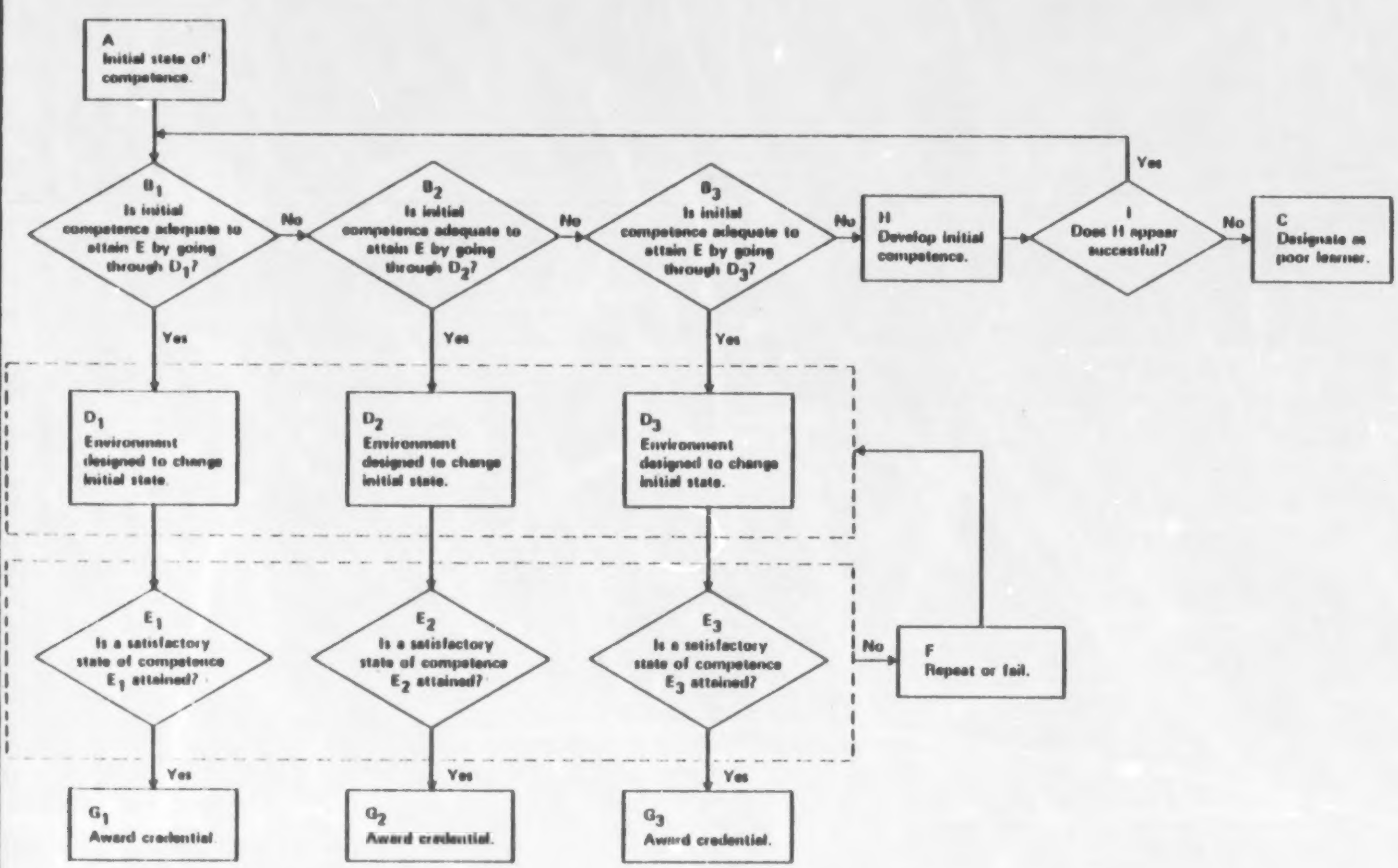

A
Initial state of competence.
B1
Is initial competence adequate to attain E by going through D1?
No
B2
Is initial competence adequate to attain E by going through D2?
No
B3
Is initial competence adequate to attain E by going through D3?
No
H
Develop initial competence.
I
Does H appear successful?
Yes
No
C
Designate as poor learner.
Yes
Yes
Yes
D1
Environment designed to change initial state.
D2
Environment designed to change initial state.
D3
Environment designed to change initial state.
E1
Is a satisfactory state of competence E1 attained?
E2
Is a satisfactory state of competence E2 attained?
E3
Is a satisfactory state of competence E3 attained?
No
F
Repeat or fail.
Yes
Yes
Yes
G1
Award credential.
G2
Award credential.
G3
Award credential.

Figure 5. Model Five: Alternate attainment possibilities.

attainment systems encourage the development of different constellations of human abilities, and can award equally recognized credentials for many different ways of succeeding and attaining different outcomes in the educational system (Cross, 1971, 1975; McClelland, 1961; Thorndike & Hagen, 1959; Wing & Wallach, 1971).

The Educational Model Pattern Required

It is not unreasonable to equate the selective, limited-alternative features of Model One with certain features of the immediate past and prevailing educational enterprise. The entering-gate assessment procedures used in our present educational institutions effectively measure those abilities that contribute to success in the particular environment provided in our schools; these tests predict, to some extent, the outcomes of learning in the limited-alternative environment depicted in Model One. They make little or no attempt and are not designed to measure those abilities related to the possibilities inherent in the other models. They are not designed to determine different ways in which students learn best, nor are they designed to diagnose the basic initial competencies that underlie the learning of various kinds of tasks in different environments for learning.

If we analyze the performance requirements of various scholastic settings and then analyze the processes that individuals bring to these task environments, we should be able, in the long run, to match the two and thus change the model of our educational system from the first model to one of the other models. Model Two provides for assistance in the modification of initial competence so that individuals can meet the demands of the learning environments provided. In the third model, individual abilities and styles of learning are matched with various learning environments that utilize these talents. A combination of both these tactics (as in Model Four) appears to be a reasonable way to provide educational environments that are adaptive to individual differences and that maximize educational outcomes.

Analysis of the abilities that comprise the initial states of competence upon entrance to an educational system should change the prevalent selective philosophy of Model One to a more adaptive philosophy in which assessments of initial competence are employed to make decisions about what can be done to increase a student's likelihood of school success. When talents and cognitive styles are matched with learning environments, an individual's background and experiences outside of school must also be taken into account. Different backgrounds influence specific styles and skills. Adaptive models of education should be able to relate such differences in competencies and styles of work to the design of alternative environments for learning.

The basic structure of the educational enterprise required for equity in the process of education can best be described by Models Four and Five. If we are primarily concerned with the elementary school's special responsibilities to its students, we aspire toward Model Four as a working goal--amendable as we obtain practical experience and research information. Model Five becomes more significant as higher levels of education are reached. While multiple attainment potentials are not to be ruled out in the elementary school, concentration on single-attainment systems emphasizes the necessity of different tactics and strategies of instruction for ensuring that each elementary school child receives the most appropriate education for acquiring the knowledge and skills that comprise fundamental literacies.

The trend toward recognizing a heterogeneity of excellences as individuals progress in their educational pursuits is perhaps an eventual outcome of our vision of adaptive education. However, we suggest that, in primary and elementary education, it is necessary to emphasize the basic literacies, skills, and knowledge required by our society. We assume that the primary task of the elementary school is to teach fundamental information and knowledge; certain kinds of skills, such as reading, language usage, mathematics, and the techniques of science and art; strategies for thinking, conceptualizing, and problem-solving; and attitudes toward people and things. We assume further that it is necessary to design an educational environment that is adaptable enough to enable most elementary students to attain these outcomes or, at the very least, to increase the likelihood that all students will go as far as they can in attaining these knowledges, skills, and attitudes.

The major burden in this enterprise falls upon the educational process--the act of teaching--rather than on the accident of a child's background. It is a matter of shifting attitude and emphasis. The attitude here is that most children can learn the skills taught in elementary school, and the emphasis is on providing the proper environment in which this can occur. The question we need to address is: How can education, given a set of particular educational outcomes for elementary school children, be made flexible enough so that the possibilities for attainment are enhanced for all without compromising standards of performance (Gardner, 1961)?

It is clear that Model One is too inflexible to accomplish our purpose. It essentially assumes that initial competence is unchangeable and that there is one best way to attain the outcomes of elementary school. Model Two attempts to introduce flexibility and enhances the likelihood of attainment by recognizing that initial competence can be influenced by the school environment and by instruction. Model Two further recognizes that by not developing initial competence, it is possible for children to build up cumulative deficits which become increasingly crippling--crippling both with respect to the development of competence in prerequisites for learning the basic literacies needed for modern living and with respect to long-term attitudinal blockages to the learning process itself. Model Three recognizes that "many roads lead to Rome"; by providing alternate instructional techniques and choices for student self-selection and control, the possibilities for attainment are increased.

As we have indicated, it is Model Four--providing for development of initial competencies and accommodation to different ways of learning --that offers maximum adaptability to individual diversity and enhances the likelihood of successful elementary school learning. The movement of education toward these multiroute patterns is our aim.

This "new" pattern to which we aspire is not really new. For many years, teachers have been concerned with the development of initial competence, especially with respect to the problems of readiness and the sequencing of learning. When we advance the notion of the development of initial competence, we refer to this longstanding concern, and we particularly emphasize that readiness skills and their underlying cognitive structures are greatly influenced by past and present environments in the life of a child. We emphasize further the need to develop more active practices for diagnosing the details of each child's initial competence so that instruction can proceed on a well-informed basis.

Accommodating instruction to different styles of learning also refers, as we have indicated, to the procedures used by good teachers when they continuously adjust their instruction to the progress and styles of the children they teach. This practice needs to be facilitated by decreasing the limitations on the adjustments and alternatives in most present-day classrooms. Procedures and organizational patterns designed for the individualization of learning can produce school environments in which children are taught in different ways in the same classroom. Flexibility is increased by permitting variation in the time required for learning, grouping children from across grade levels on the basis of their level of learning, setting different goals rather than uniform assignments, assigning and selecting different instructional materials and resources, and responding to various patterns of developing interests and talents in the course of learning. The design of contexts and procedures for such flexibility will permit the teacher to make adjustments and the student to make choices to define different paths through the elementary school.

We must further develop the capability of schools to adapt to individual differences by altering instructional procedures and programs. The requirements for this are both technical and organizational in nature. On the technical side, theories of learning and instruction need to make strong contact with school requirements for this purpose. Techniques are being developed to analyze how various subject-matter areas can be structured to facilitate learning, to analyze the nature of individual cognitive processes, and to create alternate learning strategies that can be incorporated into tools, teaching materials, and instructional practices in order to facilitate instructional flexibility.

Organizationally, the time- and classroom-bound structure of conventional education may not permit the teacher to adjust very readily to different students. Opportunity to consider or devise alternate instructional arrangements that are suitable to the individual progress and idiosyncratic requirements of the children in their classrooms is generally minimal. Even where such arrangements are possible, practical ways of assessing individual differences and procedures for making instructional decisions are not readily available. Some areas are better worked out than others. Teachers are currently offered help in the better-developed areas, such as reading and speech, where diagnostic services and suggestions for appropriate instructional modification are available in many schools from specialists.

If adaptive education is to become really pervasive, it needs to be studied and integrated into school practice in various forms. The conditions of instruction required for various types of pupils and various types of subject matter must be identified, designed, and evaluated. If this knowledge can then be transplanted into diagnostic instruments, instructional materials, and new classroom procedures and organizations, then we might come closer to being able to provide the variety of environments required to meet the diversity of human nature.

Principles for Practice

The task now is to examine the implications of the ideas expressed so far so that they can be realized in practice. This requires that we identify the principles which are basic to the design of flexible structure and practices in elementary schooling, so that programs can meet the diverse needs of students. Quality and equality in elementary school education does not mean offering the same program to all, but rather offering a program which reaches out to every child to maximize his or her attainment of intellectual, cognitive, and social literacy (Cremin, 1961; Cross & Valley, 1974).

Learner-centered Education

The key concept underlying the principles for practice discussed in this section is that the adaptive educational process is essentially controlled by the learner; the child as an individual drives the instructional process. This occurs in two ways: one, the child's distinctive needs, capacities, and abilities are taken into account on an immediate, day-to-day basis by teachers and those planning and conducting educational programs; and two, the classroom environment is designed so that children can make instructional decisions and plan their time and activities for themselves. In these two ways, the educational system flexibly adapts to the individuality of each child and enables children to function as self-generating individuals insofar as their age and experience allow. Summarized below are some principles or necessary components that underlie learner-centered adaptive educational programs (Resnick, Note 1).

1. The human and material resources of the school are flexibly employed to assist in the adaptive process. The character of resources changes when the shift is made to learner-centered education. Resources need to be more varied and used more flexibly than is currently typical. The conventional boundaries or grade and term levels and the arbitrary time limits for subject-matter coverage are adjusted to permit each child to work in the context of his or her particular competencies. Time in a school day is made flexible to accommodate various working styles, and is also used as an asset that children learn to manage. Alternative methods and materials are provided for as wide a range of objectives as possible, and are designed to encompass the interests and backgrounds of the children the school serves. The physical space of the classroom is used in a different way; space is apportioned in terms of locations for specialized environments where different kinds of learning activities can be undertaken, and where appropriate modes of learning and personal interaction can occur. Teachers, other school personnel, and individuals from the community with various interests, talents, and experiences use their special styles and competencies for different kinds of interaction with children. Increased attention is paid to the particular abilities required by different learning tasks so that the opportunities for matching students and learning activities are maximized.

2. Curricula are designed to provide realistic sequencing and multiple options for learning. The structure of the curriculum represents a balance between the extreme of a single track, highly linear sequence with little room for adjustment, and the other extreme of an "open," structureless program in which children choose among activities on the basis of moment-to-moment interest or attraction. For the learner to exercise some control over his or her own learning and for the teacher to have the flexibility required for learner adaptation, the curriculum must have many points of entry, different methods of instruction, various options that lead toward the goal of elementary school competence, and a variety of points at which performance can be assessed. Such a pliable curriculum is, nevertheless, sequenced and structured for instructional

purposes. There are sequence requirements that are specified and inherent in the material to be learned, and there are sequence requirements related to the different abilities and knowledge states of the learner. The structural requirements are relevant to future learning and do not consist of unrealistic hurdles. Curriculum materials that permit movement in various directions facilitate the kind of testing and trial that is necessary for the instructional process to be sensitive to individual requirements and to pose motivating challenges. When a child is having difficulty learning a task, the teacher or the child may decompose the task into simpler elements; when a child finds a task too simple, it can be recast into a slightly more complex form. This kind of adjustment is difficult to carry out on the spot in the classroom unless appropriately designed curriculum materials are available. Principles and examples relating to the organization of sequential learning hierarchies are described in Gagné (1962, 1970), in Resnick, Wang, and Kaplan (1973), in Beck and Mitroff (Note 2), in Champagne and Klopfer (1974), and in Klopfer (1971).

3. Open display and access to information and instructional materials are provided. When various options for learning are available, the problem that arises is the means by which these alternatives are made accessible. For young children in the early grades, the display and access system takes on the form of an environment designed for open browsing. Certain kinds of activities are provided in certain spaces of the school environment. There is a space for reading and language play; there is a space for the investigation of things mathematical; there is a space for quiet work and study on one's assignment; there is a space for intellectual play. The spaces are not rigid and closed off; they are open and next to one another and they serve to make visible the available possibilities and the ease with which they can be utilized. There is the opportunity to observe others so that learning by modeling takes place, and there is the opportunity to sample old and new things. The teacher can control the extent of available browsing opportunities for certain children (when necessary) by asking them to restrict their attention to particular spaces and materials in that space. A significant requirement of the adaptive school is the design of classroom space to encourage the use of available opportunities.

4. Testing and monitoring procedures are designed to provide information for decision making to teachers and students. In learner-centered educational systems, tests of various kinds are designed to assist access to particular educational activities on the basis of the student's interests and command of prerequisite competencies. Testing methods provide information for instructional decision-making, and these decisions can be made by the learner, by the teacher, or by both together. These tests provide information that informs the learner whether he or she is making progress toward objectives and whether he or she meets prerequisites for some new instructional activity. Testing materials explicitly display the competencies toward which the learner is working.

For effective use in learner-centered educational programs, tests need to become an intrinsic part of the instructional process as sources of information that aid further learning. The function of tests as evaluative instruments to select and compare students is less important. Tests become ways in which the student can assess "how he or she is doing"; they provide the information required to determine next steps or new options. In this sense, a student's performance in the course of learning is frequently assessed and monitored to provide for the effective guidance of learning. Thus, tests frequently are more like workbook exercises that the child and the teacher can examine. So, while test-like events may increase, their character is much different from the usual formidable evaluative role they generally play in conventional instruction.

5. Emphasis is placed upon developing abilities in children that assist them in guiding their own learning. Children are taught the skills that are essential for the effective use of school resources. They are taught management skills that allow them to assess classroom resources and plan the use of their time (Wang, Note 3). In addition, emphasis is placed on the development of "learning-to-learn" skills--skills that enable individuals to search out and organize information that will be useful to them, and which help them to "program" their own learning so that they learn more independently of organized formal programs and use formal programs more effectively. Children learn to observe the results of their actions, and this feedback helps them to modify their future activities. As a result, they learn how to profit from their experience and to consider the effects of their own activity upon others and upon themselves.

Furthermore, schools become more receptive to teaching the kind of processes that influence intelligence and aptitudes, such as perceptual skills, problem-solving, and the ability to remember and use what one remembers for new learning. The teaching of such cognitive abilities can become an expressed part of the curriculum. Management skills and cognitive learning skills in combination produce generative abilities--abilities that give individuals power to direct their own educational experiences, to incorporate new experiences, and to effectively cope with change.

6. The role of teachers and other school personnel emphasizes the guidance of individual students. The role of the teacher and other school personnel changes when the shift is made to a learner-centered educational program. Teachers use their particular strengths in different ways. Some teachers are better lecturers than others; some have deeper experiences in certain areas; some are well trained in managing exploratory experiences. Either a single teacher develops a broad range of competencies to accomplish these things, or groups of teachers use their different skills and interests accordingly, openly

working with one another. The school may employ paraprofessionals to assist the teachers. In addition, the options that a school has available can be extended by exposing students to people from a wide variety of occupations and community activities that relate to the interests of children--carpenters, artists, news reporters, bankers, construction workers, farmers, and so forth. Nonhuman resources also extend the options of the teacher by including computers, movies, TV, radio, and telephone hookups that enable students to speak with individuals whose kind of work they have just studied.

Learner-centered education can be implemented in a gradual fashion, and the teacher must, of course, be assisted in this by principals and school administrators. Initially, the class may be divided into two or three large groups, which are eventually further divided into smaller groups and individual work as appropriate. Sometimes, a teacher may begin an individualized approach with part of the class and gradually extend it to include the whole class; sometimes, instruction may begin with one subject matter and be extended to other subject matters later on.

Principals and school administrators need to pay attention to the spread and relative progress of students, and to the ways in which teachers are deployed to work with the individuals and groups that result. They also need to consider the logistics of supplying materials, including the exchange and redistribution of materials as students in different classes attain various goals and move through the curriculum. Special professional training as well as technical and organizational assistance can be provided to aid teachers and other school personnel in carrying out the management, evaluation, diagnosis, and decision-making functions required for guiding individual performance.

The organization of the school will need to change in order to facilitate adaptive programs. By its nature, the conventional classroom imposes a certain social climate and organizational structure on the school, and most traditional methods of school organization emphasize particular roles for teachers and school administrators. As one thinks about the components described above, questions come to mind. How do these roles and the organizational and social structure of the school change: as decision-making is shared with the student; as the school takes increased advantage of utilizing options and resources in the community; and as more and more activity is concerned with maintaining a dynamic structure that can adjust to the various achievements of individual children and groups of children? Answers to such questions as these are currently being sought by many school systems (e.g., Talmage, 1975).

To summarize, a program for adaptive education should incorporate the following principles:

1. Schools should be designed so that time boundaries and grade levels are treated as flexible entities;

2. Educational materials and curricula should be highly modular with flexible points of entry and branches for advancement, exploration, and review;

3. Performance should be carefully monitored so that adaptation can be made to a child's progress, emphasizing individual diagnosis and evaluation in contrast to general class assessment;

4. Levels of learning should be defined in terms of the degree of competence to be achieved, and tests and assessment procedures should provide information adequate for individual instructional guidance;

5. Children should be permitted to control their paths of learning, either because the teacher adjusts to their abilities and interests or because they can do so through their own self-management; and

6. Abilities such as self-management, and cognitive processes like problem-solving and inquiry, should become explicit subject matters of elementary school education.

Acting on these general principles involves the creative efforts of teachers, school administrators, curriculum designers, test developers, and the trainers of teachers. As experience is obtained and as the results of various practices become evident, they can be adjusted in accordance with their success in attaining the ends and objectives of increasingly equitable forms of schooling.

Research

In order to realize the potential of adaptive education, it is urgent that teachers and school administrators become strong advocates of and active participants in research that can assist in the creation of effective school procedures that can provide equality of educational opportunity and maximize the educational achievement of our children (Campbell, Note 4; David, 1972). It should be kept in mind that many widely discussed national surveys are about schooling as it generally exists; they do not consider the possibilities of new approaches to schooling. Jencks and his associates (1972), for example, wrote the following:

> In concluding this discussion, we must again emphasize one major limitation of our findings. We have only

> examined the effects of resource differences among existing public schools. This tells us that if schools continue to use their resources as they now do, giving them more resources will not change children's test scores. If schools used their resources differently, however, additional resources might conceivably have larger payoffs . . . There is no way of testing this theory except by experimentation. Past history is discouraging, but the future is not always a rerun of the past. (p. 97)

Simply increasing school resources, without using them differently, is not sufficient for improving our children's education (Rivlin, 1973). Experimentation in the use of school resources is called for. In commenting on the Jencks book, Coleman (1973) said:

> It is also not clear from the existing data just what investment of public resources is most effective in increasing cognitive skills and level of education. What is clear is that improving "school quality" by the standard measures of quality (class size, quality of textbooks, school physical plant, teachers' experience, library size, and others) has little effect on cognitive skills. This kind of negative knowledge exists; apparently innovations in education, together with careful examination of their effects, are necessary to learn positive directions for such investment. (p. 137)

A point to be made in this regard is that reallocation of the resources over which school administrators and school boards exercise control may neither significantly influence those aspects of school life that do affect children, nor change the way teachers and students behave toward one another in their daily classroom interaction. Thus, it is important to argue for research and experimentation that is directly related to the details of what goes on inside the classroom. It is only with detailed information from the classroom that informed decisions can be made about the kind, amount, and allocation of resources (Bonn, 1974; Broudy, 1972).

Teachers and school administrators need to work with researchers in the study of day-to-day interactions in the classroom. Such detailed analyses of the instructional process should enable us to identify effective practices as they occur in the context of particular school environments with particular school populations. It is the investigation of these details that provides the information necessary for determining the effectiveness of new educational patterns and for suggesting ways in which they can be improved. Research models for this purpose are available (Cooley & Emrick, Note 5; Cooley & Leinhardt, 1975; Cooley & Lohnes, 1976; Stallings & Kaskowitz, 1974).

Studying Classroom Processes

All too frequently, educational reports such as the one by Coleman and his colleagues (1966) present detailed data on initial student performance and criterion performance measures, but give only broad-brush information about actual classroom practices and procedures--information that could provide a strong basis for understanding the strengths and weaknesses of particular instructional programs. The need for information about classroom processes is especially great when a school system adopts a new pattern of teaching. The new method is generally compared with methods that have been used in the past so that a decision can be made about adoption and dissemination of the new program. In many situations of this kind, what is frequently neglected is the way in which the innovation under consideration is actually implemented by teachers and students in the classroom.

Some teachers may carry out the new practices as intended by the new program; some teachers may grasp the principles underlying the innovation, and improve on or adapt the specific recommended practices to local requirements; other teachers may actively resist the innovation by using the new materials together with practices they have used for years because they are comfortable doing what they know how to do best. Without knowledge of what actually occurs in the classroom, it is impossible to adequately assess the effects of changes or to provide teachers and school administrators with the kind of information they require for continued improvement of their efforts.

One framework for conceptualizing research on the effects of changes in instructional practice is designed to explain the variation in student performance that occurs among classrooms following an extended period of instruction (Cooley & Lohnes, 1976). Figure 6 illustrates the elements of the general framework. Three main categories are considered: criterion performance--achievement and educational outcomes; initial student performance--readiness skills, aptitude, learning style, and general knowledge and skill; and between these two, various components of the processes that characterize classroom practices.

Criterion performance refers to the educational outcomes that are expressed as the goals of an educational system. In the elementary school, these include learning basic skills and knowledge (academic achievement); self-esteem and feelings of self-worth and self-control;

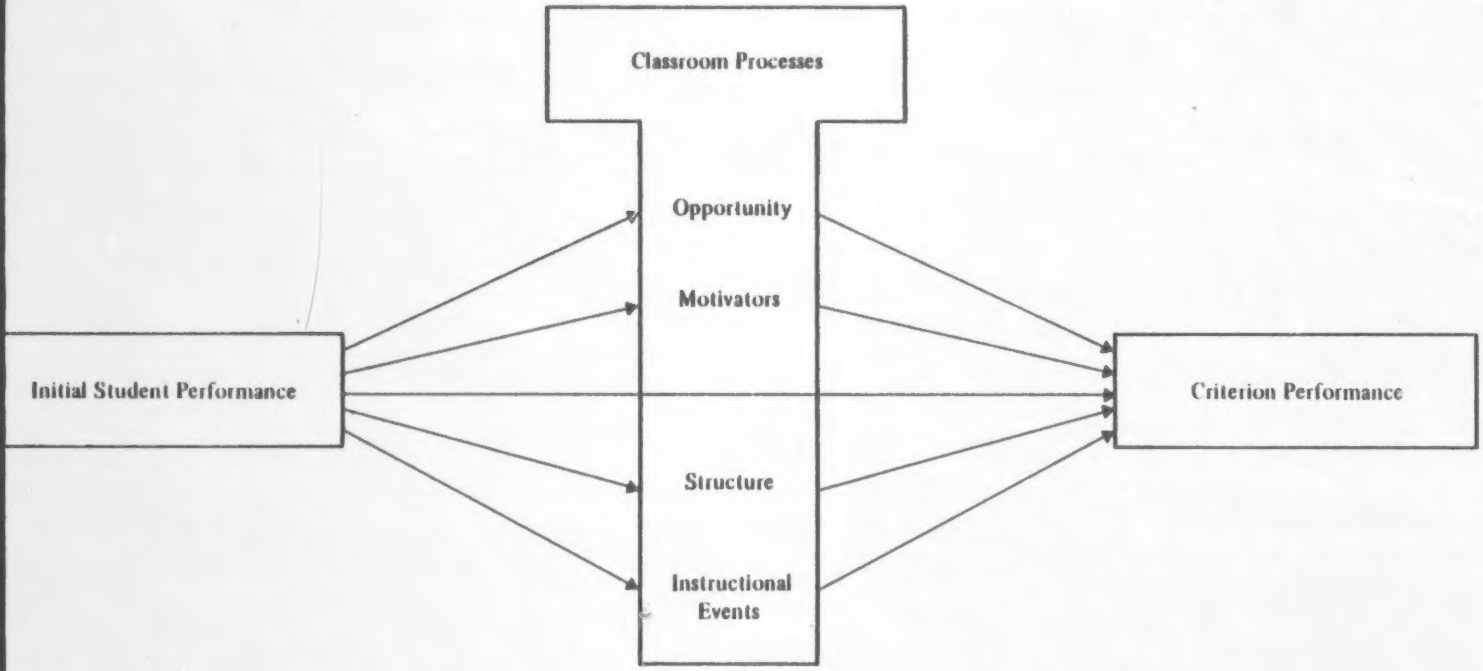

Classroom Processes
Opportunity
Motivators
Initial Student Performance
Criterion Performance
Structure
Instructional Events

Figure 6. Cooley-Lohnes model of classroom processes.

Note. Adapted from *Evaluation Research in Education* by W. W. Cooley and P. R. Lohnes (NewYork; Irvington Publishers, 1976).

the ability to understand and feel comfortable with others who are different from one's self in various ways; positive attitudes and interest toward school and learning; creativity of expression and the ability to question ideas, enjoyment and appreciation of the cultural accomplishments of society; and a sense of citizenship and community in society.

Initial student performance refers to what we earlier called "entering competence." It relates to the aspects of behavior that a student brings into the classroom and that influence learning. Initial student performance is predictive of criterion performance, and accounts for a significant portion of the achievement outcomes in schools and classrooms. These initial student abilities also comprise an important basis for instruction and are influenced by classroom practices.

In analyzing the effects of classroom practices, it is important to study the extent to which differences in school outcome performance are influenced by initial abilities, by classroom practices, or by interaction between the two. While evidence makes it clear that school outcomes are related to measured intelligence, socioeconomic status, and similar variables, the problem for school improvement is to determine the extent to which classroom practices can capitalize upon, strengthen, and in other ways take account of and adapt to entering competence.

Classroom processes are described (see Figure 6) in terms of four components representing operational characteristics of classroom practices (Cooley & Leinhardt, 1975).

1. Opportunity refers to the extent to which the kind of learning that takes place in the classroom is represented in the assessments of criterion performance. In particular, opportunity refers both to the amount of time spent by the student or scheduled by the teacher in a particular subject matter and to the extent to which the materials sampled in measures of criterion performance are actually covered in classroom activities.

Teachers in different classrooms may permit children to work on a subject matter for different amounts of time. In certain classrooms, the curriculum materials may overlap a good deal with what is covered in end-of-year achievement tests, whereas in other classrooms, the teacher might spend more time on topics not sampled by the test. In assessing this component of classroom processes, information needs to be provided about the amount of time available for and actually spent by students in various subject-matter areas. It is also important to determine the relationship between what is taught in the classroom and the end-of-year assessment of student outcomes.

2. Motivators refer to two complex sets of events. First, they refer to the behaviors and attitudes a student brings to the classroom that support attention to learning and high rates of learning activity. Second, they refer to those aspects of the educational environment that increase the likelihood of an individual's engaging in sustained learning activities when the opportunity is present.

The motivator component of the model is concerned with these latter aspects and consists of observable features of the classroom environment that are designed to encourage the student to undertake learning activity. Motivators include a variety of events, such as teacher reinforcement for attending to work, the opportunity for peer interaction, and interesting instructional materials and activities. Teacher sensitivity to the student's cultural background is an important influence on motivation; some students look for strong authority, while others require more of a partnership, especially in the beginning of a school year before the teacher's particular style and expectations have been established.

3. Structure refers to the way in which a curriculum is organized and sequenced. The clarity and specificity of the objectives of instruction may be more or less obvious and defined; the sequence may be linear and provide few points at which students can branch to new instructional options; or, it may provide many branching points to allow differential student progress. If branching options are provided, then learning activities can be matched to various student requirements, including student interest, progress, and learning style. Performance on tests that are integrally keyed to instructional materials can provide suggestions for learning activities.

Various combinations of student, teacher, and curriculum-specified instructional decisions can assist in matching student abilities to instructional activities, and this matching can be done more or less accurately. Matching may take place frequently or infrequently, and it may involve the class as a whole, a smaller group of children, or one child.

4. Instructional events refer to interaction of an instructional nature between student and teacher, or among students. In particular, this component of classroom processes is concerned with the content, quality, duration, and frequency of interpersonal interactions.

A series of questions is illustrative: What is the content of a teacher's interaction with a student? Is it concerned with the subject matter being learned? Is it an explanation of how to use and manage instructional materials? How does the teacher go about explaining things? How one-sided is the interaction? How much opportunity is there for the student to respond, to indicate his or her knowledge, or to ask questions? What is the emotional tone of the interaction? Is it positive, or negative and punitive? In general, how much student contact and personal interaction does the classroom setting allow? How perceptive is the teacher in focusing on the student's requirements for learning?

The study of classroom processes can impinge directly on the teacher's professional freedom. In order to learn from information about the influence and effects of their work, teachers must open up their classes for observation. This is difficult to do because one does not necessarily enjoy being under detailed observation unless one is either especially secure or very cavalier about one's working activities. However, if teachers participate as partners in the study of their activities toward the objective of professional improvement, then situations requiring observational study will be less threatening.

What is obtained from classroom study is information. For the teacher, it is not the information itself that is threatening, but the way in which the information is to be used. The results of classroom research should become a source for discussion and feedback about how teaching activities might be changed or continued. The information obtained need not necessarily provide a basis for the evaluation of individual worth. Just as diagnostic tests given to students can be used as supportive information for making informed instructional decisions, classroom data can be used without raising the threat of "grading." Effective practice requires indicators and information, and the study of classroom processes should be seen in this light by the teachers and administrators in schools.

Research on the Psychology of Learning and Cognition

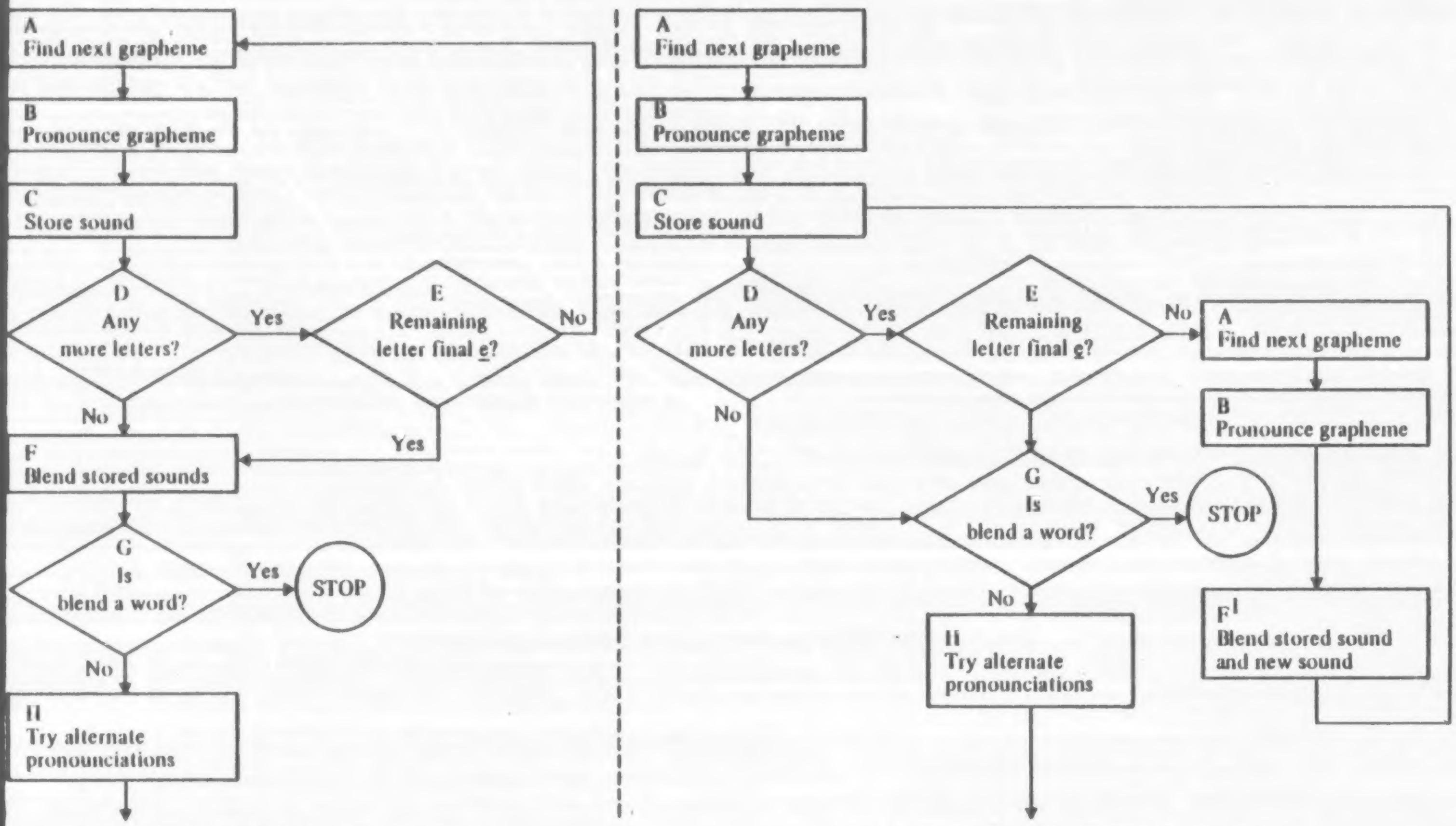
Above, we discussed research concerned with investigation of classroom settings, and of how the characteristics of students and specific classroom practices affect instructional outcomes. We turn now to research on the psychology of learning (Gagné, 1974), and on the cognitive processes that underlie the acquisition of the knowledge and the competencies learned in school.

Process analysis of school tasks. Research now being carried out attempts to analyze school tasks in terms of the demands that these tasks place on the child's memory, perceptual abilities, and capabilities for new learning. If the cognitive processes that underlie these task demands can be identified, information might be provided that can be used as a basis for assisting a child in his or her learning. The following research project on learning to read is illustrative.

In the teaching of beginning reading, a pervasive stumbling block is the problem of blending. After a child has learned to associate letter symbols and sounds (graphemes and phonemes), a significant problem for the child is putting sounds together to make a word. The following kind of behavior is typical (Beck & Mitroff, Note 2): A child has learned the sounds for hard "c," short "a," and "t"; he or she then encounters for the first time the word cat and reads, "/kuh/ /ah/ /tuh/"; and then says "kitten." This child has learned letter-sound correspondence and has also learned that meaningful units emerge when sounds are put together, but has not learned how to put sounds together.

Traditional reading programs based on phonics have been successful in teaching symbol-sound correspondences to many children; however, they have been less successful in teaching children how to put sounds together. Generally, published teachers' manuals essentially tell the teacher to say something like: "Slide the sounds together." For many children, this is inadequate instruction, and a more specific teaching procedure is required.

Research has been brought to bear on this problem through a combination of practical tryout in the schools and analysis of task processes based upon information-processing theory in psychology (Resnick & Beck, 1976). Two blending procedures were examined and analyzed--a "final blending" procedure and a "successive blending" procedure. The general information-processing structures of the two blending routines are shown in Figure 7. The routines shown describe how decoding might be carried out for single syllable, regularly spelled words--the typical vocabulary of a beginning phonics program. In (1a) of Figure 7, the final blending procedure is depicted. It is called a final blending procedure because blending is postponed until the very last step. The sound of each grapheme (letter pattern) is given and stored in memory, and the synthesis or blending occurs after the final phoneme or sound has been pronounced. The child who uses this routine proceeds as follows: "/k/ /a/ /t/ /s/ cats." In (1b) of Figure 7, the successive blending procedure is depicted; as soon as two sounds are produced, they are blended, and successive phonemes are added to the blend as they are pronounced. The child using successive blending proceeds in the following fashion: "/k/ /a/ /ka/ /t/ /kat/ /s/ /kats/ cats." The lettered components of the two blending routines in Figure 7 call upon similar actions and decisions: finding graphemes in sequence, A; pronouncing the identified graphemes (sounds), B; remembering the pronounced sound, C; deciding whether more graphemes remain to be sounded, D and E; blending, F; and matching the pronounced word against one's knowledge to determine whether an acceptable word has been produced, G and H. The two routines differ, however, in the way in which the actions and decisions (A through H) are organized, and this organizational difference appears to influence the ease of learning and performing the decoding act.


A
Find next grapheme
B
Pronounce grapheme
C
Store sound
D
Any
more letters?
Yes
E
Remaining
letter final e?
No
No
Yes
F
Blend stored sounds
G
Is
blend a word?
Yes
STOP
No
H
Try alternate
pronounciations
A
Find next grapheme
B
Pronounce grapheme
C
Store sound
D
Any
more letters?
Yes
E
Remaining
letter final e?
No
A
Find next grapheme
B
Pronounce grapheme
No
G
Is
blend a word?
Yes
STOP
No
H
Try alternate
pronounciations
F^1
Blend stored sound
and new sound

(1a) Executive for final blending procedure.

(1b) Executive for successive blending procedure.

Figure 7. Executive routines for synthetic decoding.

Note. From "Designing Instruction in Reading: Interaction of Theory and Practice" by L. B. Resnick and I. L. Beck. In *Aspects of Reading Acquisition* edited by J. T. Guthrie (Baltimore: Johns Hopkins University Press, 1976).

This analysis of the two procedures suggests that the successive blending procedure might be easier for children than the final blending procedure. The researchers (Resnick & Beck, 1976) report:

> According to the final blending routine, each grapheme's sound is given, and the full set of phonemes in the word must be held in memory until the entire word has been "sounded out"; only then does any blending occur. But in the successive blending routine, blending occurs sequentially at each stage at which a new phoneme is pronounced. At no time must more than two sounds be held in memory (the sound immediately produced and the one that directly precedes it); and at no time must more than two sound units be blended. Thus, the routines differ in two respects: (1) in the maximum number of sound units to be held in memory during the course of decoding, and (2) in the maximum number of units to be blended during a given attempt. The standard routine on the left (1a of Figure 7) requires remembering each of the separate units that the reader identifies as graphemes. The routine on the right (1b) never requires remembering more than two units. (p. 185)

Thus, given the fact that memory capacity is limited, especially in young children, this research suggests that the procedure requiring less memory work (the successive blending procedure) should facilitate the decoding process where certain children find it difficult to learn.

Conclusion

In this chapter, principles have been described that, if turned into practice, could assist in the design and implementation of adaptive school programs. In view of the overriding importance of education patterns that foster equity in the instructional process in society, two items (for school improvement) on the agenda of educators ought to be: (a) the organization of communities, schools, and researchers for productive research leading to school change, and (b) the persuasion of taxpayers and their representatives in government to provide funds commensurate with this need. As we begin to solve the first of these agenda items, our chances of solving the second one may improve.

An important aspect to be emphasized in our advocacy of flexible programs of instruction is that the adaptive educational patterns described in this chapter are not to be interpreted as one-time adjustments like traditional placement programs. Rather, the concept of adaptive education suggests teaching practices that offer continuous interaction between individual performance and the conditions for learning. The process of adaptive education is best understood as a continuous reciprocal interaction between the behavior of the individual and his or her educational environment, where each determines the requirements of the other.

The ultimate goal of increased knowledge of the intellectual and social aspects of learning is to provide every person with an equal opportunity to receive a high quality education. Systems of instruction must be better able to take account of individual differences so that fewer persons are passed over by an inflexible system. In order to design the means to do this, more information is needed about how to effectively match and challenge the capabilities and styles of individuals from various backgrounds with motivating instructional practices. With such knowledge, we can design classroom techniques and educational alternatives that reach out to every person, expanding the unique personal resources that can contribute to their responsible and rewarding involvement in society.

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CHAPTER 3

Social Economic Status (Class) as a Manifestation of Human Diversity

George Clement Bond

The purpose of this chapter is to provide a general appraisal and review of the key issues concerning the relationship of socioeconomic status (class) to educational achievement. The theories and concepts, issues and debates raised here are intended for consideration by the intelligent practitioner. This chapter may appear simplistic to those scholars immersed in the subtle complexities of class, status, caste, ethnicity, race, and other forms of social distinctions within populations. It is my hope that even they may find it informative. The material presented is from the idiosyncratic perspective of a social anthropologist. Sociologists and political scientists will find many shortcomings. But they must remember that the explication of knowledge involves a division of labor, a differential in sensitivity, emphasis, and perspective related to disciplinary interests and theoretical persuasions.

Even within the discipline of anthropology there is a marked and artificial distinction between those who pursue culture and those who acknowledge the primacy of things social in the study of education. The cultural anthropologist interested in the analysis of education assumes that his principal concern lies in exploring the transmission of culture, and though there is little agreement on the definition of that term, this orienting phrase sets the limits of his universe of exploration. Since culture is transmitted, anthropologists are supposed to discover the mechanisms and procedures by which the inventory of learned experiences is selectively transmitted, to whom, under what conditions, and for what purposes. This orientation to transmission and commitment to culture means that cultural anthropology relies heavily upon the methods, concepts, and findings of psychology, and of culture and personality, and upon studies of acculturation and symbolic and value systems. Comitas and Dolgin (1978) aptly capture the nature of this approach as follows:

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> In essence, anthropologists directly involved in questions of cultural transmission focus on the forms through which values and attendant behavior are taught and the specific content of the social, cultural, or group value system. (p. 171)

Cultural transmission forms a focus of inquiry, but alone it is little more than an orienting statement. It is not a theory and should not be accorded that status.

Social anthropologists, on the other hand, operate with a different set of assumptions in dealing with education. They treat education as a field of inquiry on a level with fields of investigation such as economics and religion. They are concerned with the context within which institutions operate and relate in a statistical and normative manner to other social formations and institutional arrangements. For example, if cultural anthropologists may be said to look at cultural transmission, social anthropologists are concerned with illuminating the social context of the transmission and its implication for other social arrangements in society. It is apparent that the one cannot, or rather should not, operate without the other; the interests of both cultural and social anthropologists are complementary.

The preliminary intention of this chapter is to set the intellectual scene for a discussion of the issues and debates surrounding the notion of class and educational achievement. In order to do this, it will be necessary to review an inventory of concepts as they relate to theory and to epistemology. Frequently, the principal protagonists in the debates adhere to and expound different theories of knowledge. Their theories and concepts may be derived from, and rooted in, distinct and very often incompatible assumptions about knowledge and reality. Hence, it is often difficult to weigh the relative values of arguments if and when the basic assumptions are not the same. In its minimal sense, a theory is here taken to be a body of interconnected propositions that "serve to map out the problem area and thus, prepare the ground for its empirical investigation by appropriate methods" (Nadel, 1957/1969, p. 1).

A second feature of the preliminary intention is to introduce the historical protagonists who have expanded, interpreted, and operated the concepts and characteristics of the sides of the debate.

Social scientists use theories and concepts to help them grasp, order, analyze, and understand the nature of the societies, cultures, and sociocultural formations with which they are confronted. Each society has specific features or attributes that may differ from or resemble those of other societies. As Nadel (1903-1956), an eminent social anthropologist, put it: "Societies are made up of people; societies have boundaries, people either belong to them or not; and people belong to a society in virtue of rules under which they stand and which impose on them regular, determinate ways of acting towards and in regard to one another" (Nadel, 1957/1969, p. 8). Put simply, societies are bounded units whose members are governed by rules. Of course, the unit set out by these criteria is arbitrarily defined, but nonetheless it is a starting point for distinguishing or apprehending social differences. Firth (1961) observed that "if society is taken to be an organized set of individuals with a given way of life, culture is that way of life. If society is taken to be an aggregate of social relations, then culture is the context of those relations" (p. 27).

A more usual definition of culture, however, is the one expounded by Tylor (1838-1917), a British social anthropologist. In his book, The Origins of Culture (1871/1958), he made the observation that "culture . . . is that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society" (p. 1). Many of the founding figures of contemporary social sciences, such as Marx (1818-1883), Emile Durkheim (1858-1917), and Weber (1864-1920), expounded theories of society and culture and the manner in which they are structured and change. Their arguments concerning social stratification and society inform many of the current views of class, and their theories are preeminent in debates both within and outside academia. The intellectual traditions that they have established affect the orientations of scholars and practitioners to social problems. For that matter, their theories help to define the nature of social problems and the manner of their solution.

By now it should be clear that in this chapter human diversity refers to social properties distributed within populations, and these social properties form the basis for distinguishing populations and arranging them into strata. Modern complex societies in particular are internally differentiated or stratified, and one of the principal bases of stratification is class. Marx expounded a theory of class that is accepted by many educators and social scientists. Though these scholars are usually grouped together and labelled "Marxists," there are often disagreements among them as to Marx's definition of class. This is understandable since there is ambiguity in Marx's treatment of social class. Two modes of treating class may be distinguished in a Marxist position. The first is the objective classification of an aggregate of people with reference to their similar relation to the means of production. For Marx, much of human history is rooted in the class struggle. As he and Engels put it in the Communist Manifesto, "The history of all hitherto existing society is the history of class struggle" (1872/1965, p. 45). Historical movement is thus based upon the struggle between the exploiters and the exploited. Under a capitalist mode of production, the two principal and potentially antagonistic protagonists are the bourgeoisie, "the owners of the means of social production and employers of wage labor," and the proletariat, "the modern wage laborers who, having no means of production of their own, are reduced to selling their labour power in order to live" (1872/1965, p. 45). Though the bourgeoisie and the proletariat constitute the two principal social classes in a capitalist productive mode, there may also be petty bourgeois (Marx & Engels, 1872/1965) and peasants (Marx, 1852/1975). Marx's understanding of history and of society is not a static one, but progressive and dialectical; movement in history and society is seen to be rooted in the mode of production and the nature of contradictions and struggle that contradictions produce. This leads to Marx's second view of class. It is one based in struggle that gives rise to a subjective but essential element in the concept of class; namely, class consciousness. Hobsbawm, a British social historian, observed that "class in the full sense only comes into existence at the historical moment when classes begin to acquire consciousness of themselves as such" (1972, p. 6). This view of consciousness as an essential component of class is shared not only by Hobsbawm, but also by the late Oliver Cox in his profound analysis of American society and the historical position of minorities (specifically blacks or Negroes) within it (Cox, 1970). In gross terms, classes form a set of interrelated strata formulated in relation to the mode of production and based in consciousness. It is this consciousness, this subjective component, that makes class an active force in history. Consciousness, however, is not given. For some Marxists it arises from struggle, and it is struggle that makes for classes and class consciousness. Thompson, a social historian, is the principal exponent of the notion of classes as emergent; that is, as the contingent outcome of struggle rather than as the starting point of analysis. In his view it is struggle that produces classes. In a recent article, Thompson (1978) made the following statement:

> Class in its heuristic usage, is inseparable from the notion of "class struggle." In my view, far too much theoretical attention (much of it plainly ahistorical) has been paid to "class," and far too little to "class struggle." Indeed, class struggle is the prior, as well as the more universal concept. To put it bluntly: classes do not exist as separate entities, look around, find an enemy class and then start to struggle. On the contrary, people find themselves in a society structured in determined ways (crucially, but not exclusively, in productive relations), they identify points of antagonistic interest, they commence to struggle around these issues and in the process of struggling they discover themselves as classes, they come to know this discovery as class consciousness. Class and class consciousness are always the last, not the first, stages in the real historical process. (p. 149)

This mode of class analysis acknowledges the contingency of class, but it is one that is not usually countenanced by empirical sociologists concerned with the relationship between class and educational achievement. Rather, such sociologists assume class and, one may suggest, in doing so negate the dialectical perspective of historical process. Bowles and Gintis (1976), working within the tradition of Marxist sociological analysis, offered the following statement on class:

> A class is a group of individuals who relate to the production process in similar ways. A class structure emerges naturally from the institutions of U.S. Capitalism. Property relations are an essential aspect of class; no less important are the relations of control. Considering the class structure in the broadest outline, capitalists own and control the means of production. Workers, conversely, do not own the products of their labor, nor do they own or control the tools, buildings, and facilities of the productive process. (p. 67)

Class, as Bowles and Gintis used the term, is expressed concretely in the relation of groups and in their performance in an educational situation. They observed that "classes are important because individuals in U.S. society do not relate to each other as individuals alone, but as groups. That is, class is a social concept, and classes are defined only through how they relate to other classes" (1976, p. 67). For these authors, classes are given and not in the making through struggle. The assumed concreteness of class makes it easier to apprehend, quantify, and use in discovering significant correlations, particularly those of class and educational attainment.

Social scientists employ dichotomous categories to sort out and organize facts, knowing full well that their dichotomy may be arbitrary and subsequently discarded. Categories are used to provide order, much like scaffolding in the construction of a paradigm. Once the scaffolding is discarded it is hoped that the paradigm will be able to stand on its own, that is, that it will possess some degree of explanatory power. In an attempt to represent aspects of the Weberian and Durkheimian traditions pertinent to this chapter, such a dichotomy will be introduced to classify and order, so as to present as succinctly as possible these two further traditions.

Two frames of analytical reference may here be distinguished: methodological individualism (see Ahmed, 1976, p. 3; A. Cohen, 1974, p. 40; and Wallerstein, 1977, p. 5) and methodological holism. The former derives much of its sociological inspiration from Weber and emphasizes social action and the actor as at the center of the analysis. The individual, though a member of society, retains a certain autonomy and through his actions may confront and affect society and his position within it. He has choices and makes decisions to improve or maximize his chances. The individual is thought of as an active agent in history and society, manipulating and reordering social arrangements to better his position. He operates in an instrumental world that allows considerable freedom to the individual, yet it is a world not devoid of constraints. This orientation toward "action theory" and the individual as an active agent represented a significant swing of the pendulum away from the theoretical emphasis of both Marx and Durkheim, specifically their assigning of primacy to the mode of production or to society itself.

Weber elaborated a complex set of propositions related to class and status. Since a detailed exposition of his theory would be inappropriate here, an adumbrated view of his formulations will be presented. Weber, like Marx, recognized classes. For him, class was objective and intimately related to the market, a situation involving speculative economic action oriented towards acquiring profit through competition. This market situation presupposed an economy based on the use of money. A class consisted of an aggregation of individuals who occupied a similar position in relation to the market situation. In a complex exposition Weber presented his view of class as follows:

> In our terminology, "classes" are not communities; they merely represent possible, and frequent, bases for communal action. We may speak of a "class" when (1) a number of people have in common a specific causal component of their life chances, in so far as (2) this component is represented exclusively by economic interests in the possession of goods and opportunities for commodity or Labour Markets. (1957, p. 64)

Class is here viewed as a potential group or a quasi group, an aggregation of individuals standing in a particular relation to the market and governed by its principles. Their potential as a group is realized through common economic interests. The relationship of class situation to market situation means that class divisions can be as minutely graded as economic positions. Although Weber did distinguish several classes (1947, pp. 424-425), the ownership or nonownership of property is historically the most significant criterion. There is, then, an objective notion in Weber's concept of class and class situation that is intimately related to the market situation. Though class refers to an aggregate of individuals and not to a self-conceived community, it was nonetheless thought by Weber to influence the actions of individuals and groups. Status accounts for that component of subjective recognition of shared similarities: a style of life, education, and the acquisition of corresponding modes of life, or prestige of birth, or of an occupation (Weber, 1947, p. 428).

Giddens, a social theorist, observed that

> The status situation of an individual refers to the evaluations which others make of him or his social position, thus attributing to him some form of (positive or negative) social prestige or esteem. A status group is a number of individuals who share the same status situation. Status groups, unlike classes, are almost always conscious of their common position. (1971, p. 161)

The extreme extension of status groups closure is represented by castes in a system of castes.

Three important elements emerge from this brief discussion of Weber. The first element is an objective dimension of class in relation to the economic properties of the market, the second element is a subjective recognition of shared commonalities, and the final element is the recognition that individuals occupy positions within a social system. The three elements are significant in the social sciences, particularly in the evaluation of class. They form a point of departure for analyzing intraclass relations, status, and roles. In his theory of action, Weber also allowed for another, less formal strand in sociological analysis--the individual as an active agent. This strand has found its adherents in network analysis, for example, and in the "big man" theory of history and society.

Distinguished social scientists such as Warner, Merton, and Blau have followed, extended, and revised the Weberian tradition within sociology. They belong to the mainstream of sociological thought, and through their analysis of social class, status and role, and formal organizations, they have contributed significantly to the advancement of Weber's positions.

Warner was a social anthropologist who, after studying an indigneous Australian population, turned his attention to the analysis of his own society, the United States. He was a pioneer of American community studies and of systems of social stratification. His was a view that never excluded the individual as actor and agent of change. In his analysis of a New England city (Yankee City) and a small midwestern town (Jonesville), Warner (1969) rejected a Marxist approach to class. According to Blau and Duncan, Warner was unaware of Weber's conceptual scheme, but he nonetheless came to the same conclusion; namely, that individuals were differentiated into various prestige strata on other criteria than strictly economic ones (Blau & Duncan, 1967). Warner developed his own conceptual scheme for class analysis, one which was to provide a touchstone for subsequent studies of class in the United States.

For Warner, social class is "two or more orders of people who are believed to be, and are accordingly ranked by the members of the community, in socially superior and inferior positions" (1969, p. 36). He sought to combine both an objective and a subjective approach to class analysis. In the former, the investigator ranks the population into classes according to stipulated criteria, while in the latter situation it is the people of the community who do the ranking. The subjective assessment of class was formalized in the method of Evaluated Participation. This method assumed that the members of a community could, for instance, rank their fellows according to social reputation and institutional membership. The total configuration of Evaluated Participation represented an individual's ranking on the subjective scale. The objective assessment of class was formalized in the Index of Status Characteristics that is supposed to distinguish the socioeconomic levels of the community. Four criteria were associated with this index: occupation, source of income, house type, and dwelling area. These subjective and objective indices were supposed to provide an accurate evaluation of the class structure of a community (Warner, Meeker, & Eells, 1949). The classes identified by Warner and his associates were not closed. Yankee City (Newburyport, Massachusetts), for example, was viewed as an open society in which the social mobility of its six classes was possible.

Merton, a sociologist in the Weberian tradition, has contributed important concepts to the analysis of social structure (or structures) and education. He elaborated two concepts, status and role, that may be attributed to Linton, an anthropologist. For Linton (1936), status was an individual's social position in a social system and role was the acting out of that position according to the expectations attributed to it by members of the society. Status mediated between the individual and society and transformed the individual into a somewhat predictable social actor. A society could be reduced to an inventory of interconnected and interdependent statuses and roles. Statuses were more enduring than the individuals who passed through them. Linton's view of statuses and roles, however, was too simplistic and mechanical, and could provide only a gross approximation of the behavioral reality. Merton's concept of role set introduced a more accurate way of apprehending the diversity constituent in the behavioral stream of human interactions. By role set he means that "complement of role relationships which persons have by virtue of occupying a particular social status" (Merton, 1961, p. 369). This important concept needs further explication. As Merton himself indicated, the status of teacher "has its distinctive role set, relating the teacher to his pupils, to colleagues, the school principal and superintendent" and so on (1961, p. 369). The behavior of the individual occupying the status of teacher assumes a degree of predictability. The diversity within his behavioral stream is intimately related to his perception of his audience and their social attributes. Thus a teacher may behave in one way toward his pupils and in another way toward their parents. But there may not necessarily be a consistency in the teacher's behavior toward either pupils or their parents. The factor of the socioeconomic backgrounds of both the teacher and the parents may intrude into the interaction and redefine the relationship of teacher to pupil. More specifically, a middle-class teacher may behave in a very different way toward a middle-class parent than toward a lower-class parent. This picture may be rendered more complex through the introduction of other variables such as the race, ethnicity, and religion of the teacher and the parent. The notion of role set encompasses this complexity and permits a powerful explanatory formulation of situational interaction to emerge. Though there is this recognizable complexity, there remains a certain simple elegance in the formulation; the status is still that of teacher with an accompanying inventory of behaviors within the role set. Variables such as class, race, and ethnicity trigger particular responses mediated by categorical or cultural expectations that may be shared or understood, but neither agreed upon nor accepted by those involved in the particular interaction. As far as the teacher/pupil relationship is concerned, however, there is a transfer effect in that children are often perceived as bearing the social attributes of their parents. The children of lower-class black parents in the United States will be treated in a particular manner by a middle-class white teacher who operates in categorical terms. A modified behavior will be extended to the parents, mediated through the cultural prism of ascriptive attributes such as age and sex. Again the picture is complex, and brings to the fore the diverse determinants of behavior in social situations. This complexity based upon diversity, of course, affects the situations and conditions of learning. Class, though an important determinant, constitutes only one.

It should be apparent that status and role transform and fracture the individual into a series of social components. Some social scientists assume that statuses and role sets are given, although they recognize behavioral variation within situationally and categorically stipulated limits. All teachers do not behave in the same way under the same conditions. There is room for maneuver, and the possibility of the individual's creating his own network of social relationships. From the egocentric perspective, the individual may seem to generate new social arrangements and to effect social change. But as Karabel and Halsey (1977) point out, relationships that are objectively indeterminate for the individual may be anything but random when perceived from the perspective of social structure.

The argument above leads directly into a discussion of methodological holism. This position assumes the priority of society; i.e., that individuals are born into a matrix of interacting and largely fixed social patterns and positions (Ahmed, 1976). Methodological individualism emphasizes the individual as an autonomous agent in society, whereas methodological holism stresses the autonomy of society in the individual. So cryptic a phrasing demands further explication, and here we may turn to Durkheim.

Durkheim, a French sociologist, was at one point in his academic career a professor of pedagogy. In his book, Moral Education, he made the astute observation that "a science of education is not impossible; but education itself is not that science" (1973, p. 1). Durkheim found that education was an appropriate field of activity for elaborating (or demonstrating) the essential significance of one of his most basic concepts, the "social fact" (Durkheim, 1958). According to him, social facts were to be treated as things. Their importance was that they mediated between society and the individual and made the individual a social being. Social facts were external to the individual, were generalized in society, and imposed constraints on human behavior (Durkheim, 1958). The basic opposition lay between society, on the one hand, and the individual on the other; that which made the individual social was his partaking of things social. It is here that one may observe the Durkheim who is not the father of structural functionalism, but the stepchild of Hegelian dialectics.

Durkheim attributed primacy to society, and one of its principal institutions for socializing the individual was education. In Western societies the formal organization of education in school systems meant that schools became the principal purveyors of social facts. Thus, as formal institutions, they were linked with other institutions in determining the structure of society and the attitudes, values, and behavior of the public.

The educational arrangements of a society require close scrutiny. The educational system may be looked at from a number of perspectives. For example, it may be treated as one of the principal channels of social mobility or as a mechanism by which existing class arrangements are maintained and preserved. Individual mobility, upward or downward, may occur through academic achievement, but dissolution of the class structure is not likely to occur. That is, one could interpret education in radical or conservative terms, a point that will become apparent in this chapter.

Education should not be narrowly conceived or defined, since it is one of the fundamental aspects of the human species. It occurs under numerous conditions in a multitude of places. Cremin (1977) defined it as "the deliberate, systematic, and sustained effort to transmit, evoke, or acquire knowledge, attitudes, values, skills, or sensibilities, as well as any outcomes of that effort" (p. viii). In these terms, education is eminently social and is a part of the historical process that binds individuals and transforms them; it is superorganic. So broad a view of education encompasses a wide field, only a few facets of which will be treated here. The methodological holism of the Marxist and Durkheimian traditions, the primacy of productive modes and of society, and the methodological individualism of the Weberian tradition (as exemplified in action theory) pervade the study of the relation of socioeconomic status and educational attainment. It is clear that the separation is artificial, and that both perspectives are essential to the attempt to apprehend this complex social interconnection.

The preceding section has attempted to outline some of the major theoretical issues underlying concepts of class and status. As used by many sociologists of education, however, the term class or socioeconomic status is often loosely used to classify children within the educational system. In much of the literature, the term socioeconomic status is preferred to class. The former term is considered a more neutral one. Users of the terms do not necessarily adhere to different theoretical positions. British writers tend to use the term class, and Americans prefer socioeconomic status. Whether they are in fact describing different entities is dubious. It may be that in some instances socioeconomic status is used in an attempt to grasp a more refined concept. In Britain, sociological allocation to classes is often based on occupation alone. Socioeconomic status, as the name implies, often involves a combination of factors; namely, occupation, income, and educational level. It therefore allows for greater flexibility than a classification based solely upon occupation. The adequacy of the indices used to determine socioeconomic status may be questioned. Depending upon the views of the researcher, the term permits a greater or lesser degree of refinement. In the section of this chapter that considers some of the literature relating to the relationships between educational achievement and socioeconomic status or class, the two terms will be used interchangeably, since this is how they are in fact used by many writers. When the British sociolinguist Bernstein uses the term lower working-class children, there is no reason to suppose that he is using a basically different category from that of an American writer who uses the term low SES student (SES = socioeconomic status), even though the two writers may adhere to vastly different theories of the nature of society.

There have been attempts by some researchers to examine the dimensions of stratification more closely, and although some of these efforts may be criticized as leading to methodological empiricism, they deserve attention. Numerous measures of social stratification have been developed, most of them based on single variables such as occupation, education, and income.

Some scales, such as Hollinghead's two-factor index of social position (combining occupation and education) and Warner, Meeker, and Eells' index of status characteristics (combining occupation, source of income, type of house, and neighborhood) are based on several variables. As Stricker (1978) pointed out, these indexes have been criticized for ignoring certain dimensions of stratification. In addition, there has been debate over whether the indexes are applicable to American blacks, since the social structures of blacks and whites may differ (Stricker, 1978, p. 2). Stricker (1978) claimed that his research shows that not all the indexes are uniformly applicable to blacks (p. 6). He maintained that stratification is more complex than much current conceptualization has anticipated.

An example of the complexity that may be achieved by attempts at multidimensional analyses of social stratification is provided by the tables included in Stricker's (1976) article, "Dimensions of Social Stratification for Whites and Blacks." More than one hundred and fifty variables relevant to social stratification are listed. (Examples of relevant variables are buying behavior, type of punishment used towards children, the number of rooms in the house.) While some may welcome complexity of this order for leading us to greater scientific accuracy in measuring status, others may criticize it on the grounds that classes cannot be reduced to these terms. According to Giddens (1971), Marx maintained that "class must not be identified with either source of income or functional position in the division of labor. These criteria would yield a large plurality of classes" (p. 37). In addition, such methodological empiricism would obscure the dynamics of the relationship between classes, a relationship that constitutes a vital moving force in history.

Socioeconomic status, or class, is a variable that may be seen to relate to many other aspects of human experience. The relationship of the socioeconomic status category to the dimensions of human diversity is extremely complex, leading to numerous theories and disagreements over cause and effect. There are those for whom socioeconomic status is the decisive factor governing other aspects of human diversity such as cognitive style, health and nutritional status, identity, language and dialect, and motivation and aspiration. This relationship between socioeconomic status and some of the aspects of human diversity mentioned above will be discussed more fully later in this chapter, when their combined effect on educational performance will be discussed.

The relationship between socioeconomic status and health and nutritional status is perhaps more striking, or rather more understandable, than the relationship between socioeconomic status and educational achievement, and has been explored by, among others, Birch and Gussow (1970). They claimed that poverty contributes to educational failure, not simply because poor children are culturally disadvantaged, but because their health and nutritional status is inadequate to allow for their maximum mental development and for the realization of their educational potential. From the moment of their birth, and even before, poor children are at greater risk of deficient development. Birch and Gussow stressed that society should concern itself with "the full range of factors contributing to educational failure, among which the health of the child is a variable of potential primary importance" (1970, p. 9). They produce evidence that there are correlations between children's socioeconomic status and their exposure to physiological hazards that are relevant to education. For example, the incidence of low birth weight (recognized to be frequently associated with neurological and physical defects) is higher among the poor. Moreover, Birch and Gussow cited an interesting Scottish study (Illsley, 1967) that demonstrates that the IQ scores of the prematurely born in the lowest classes are more depressed than the IQ scores of the prematurely born in the upper classes. The data suggest that a favorable postnatal environment can serve to compensate for handicaps associated with prematurity. They also offer striking evidence of the complex interaction among physiological condition, mental ability, and social class. Whereas premature birth may be viewed as posing a threat to any child's intellectual development, it is only among the poorer classes that the threat is fully realized. Other researchers have confirmed the view that prematurity presents a greater hazard in some socioeconomic groups than it does in others (Drillien, 1964). Douglas (1960), in an attempt to fully equate the background variables relative to achievement in a study of the academic performance of premature children, identified three groups of significant variables--social and educational background of parents, maternal care and management, and interest of parents in school progress. Although Douglas found that all of these factors have an effect on school performance, he demonstrated that prematurity presents a greater risk to children from a poor environment.

The complex interaction of biological and social factors is also demonstrated by statistics on the prenatal deaths of multiparous women. Although all grand multiparae are at risk compared with women who have had fewer children, the risk increases markedly for lower-class women. Similarly, the risk of producing a stillborn child is higher for the lowest socioeconomic groups.

Much of the data cited by Birch and Gussow comes from British sources. In order to gain as clear a picture as possible of the complex relationship between socioeconomic, physiological, and intellectual status, it is helpful to examine data on class-related conditions that are relatively unclouded by factors of race and ethnicity. For example, it is known that black babies born in the U.S. are smaller at birth, on the average, than are white babies. This might appear to be an ethnic or racial phenomenon rather than a class one, but in a relatively ethnically homogeneous population such as that studied by Drillien (1964) in Aberdeen, the distribution of underweight babies is quite clearly related to socioeconomic status. Moreover, as Birch and Gussow pointed out, the U.S. statistical material is in some instances inadequate. Whereas there is rather abundant material on the relationship between height, social status, and reproductive performance in Great Britain, in the United States very few data are available. Birch and Gussow attributed the obstacles to adequate research in the United States to the fact that ethnicity is confounded with social class in this country. Birch and Gussow also maintained that interclass movement is freer here than in, say, Britain (1970, p. 121), although they did not offer any data to support this assertion.

Birch and Gussow quoted several sources that demonstrate a correlation between malnutrition among children, lower IQ scores, and poor academic performance. They cautioned against assuming that malnutrition directly affects either nervous system development or intellectual growth since "malnutrition in man does not occur in isolation from other important biologic and social circumstances" (1970, p. 194). Similarly, "intellectual development does not take place in relation to some artificially isolated segment of the environment--the verbal environment, the social environment, the cognitive environment--but in relation to the child's total environment, physical as well as physiological, and prenatal as well as postnatal" (1970, p. 266). Birch and Gussow went on to say that "the environments in which disadvantaged children develop from conception on are far less supportive to growth and health than are those of children who are not disadvantaged" (1970, p. 266). While they admitted that intervention at any point in the cycle linking poverty and educational failure may serve to break the chain, they caution that such intervention will only have a limited effect.

In the preceding paragraphs, a correlation has been assumed between poverty, poor nutritional status, and low socioeconomic status, even though, theoretically, low socioeconomic status need not necessarily imply poverty and malnutrition. In practice, however, even in countries that are generally affluent, low socioeconomic status does tend to expose people to greater health and nutritional hazards.

Analysis of those factors that affect individual success or failure in educational competition has come to occupy a major place in educational research, the more so since educational achievement is popularly viewed (rightly or wrongly) as a necessary precursor to advancement in a theoretically open society. The greater the importance attached to education as a factor in social mobility, the greater the attention paid to reasons for, or correlates of, educational failure. One factor which seems generally to be accepted as affecting academic achievement is socioeconomic status. Academic achievement is here used to cover a number of separate, though related, areas of achievement, including performance on IQ and achievement tests, school success (grades), and entrance to higher education. It is generally accepted that children from lower socioeconomic groups do less well in all these areas than do their counterparts from higher socioeconomic groups. The relationship between class and academic achievement was particularly noticeable in the United Kingdom during the period in which the "eleven-plus" examination was used to direct children into different types of secondary schools. Although, theoretically, admission to grammar schools (the English equivalent of academically oriented high schools) was open to any child who succeeded in the selection examination, in practice, a child's class position strongly affected his or her chances of gaining admission to a selective high school (Floud & Halsey, 1957). The English example is chosen because it demonstrates so clearly a correlation between social class and educational opportunity in a predominantly ethnically homogeneous society. Similar findings have been demonstrated in other European countries where children are admitted to secondary schools on a selective basis (Girard, 1961). Although there is ample evidence that social class determines educational achievement in the United States as well, the picture here has been blurred by factors such as race and ethnicity, and by the lack of a selection procedure such as the English eleven-plus examination.

Although there is widespread agreement on the existence of a socioeconomic status/academic achievement correlation, there is considerable controversy over the reasons for the correlation. As Rossi (1961) has pointed out, "while . . . studies . . . uniformly find socioeconomic status playing a role in achievement, it is not entirely clear how it does so" (p. 269). Numerous explanations have been put forward and, at the risk of oversimplifying, it would seem that most of these explanations for the socioeconomic status/academic achievement correlation fall into four broad categories. Briefly, these are:

1. a genetic argument,
2. a cultural argument,
3. an argument positing unequal educational treatment, and
4. an explanation of educational differences as part of class analysis.

1. The first explanation posits the genetic inferiority of lower socioeconomic groups. Proponents of this position maintain that certain groups have low status because they are genetically inferior. The assumptions are made that social mobility is open to anyone with the requisite talents and that natural endowment is reflected in privilege. For advocates of genetic theory, such as Jensen (1969), Herrnstein (1971,

1973), and Eysenck (1971), talent is believed to be inherited and society is believed to reward genetically inherited abilities. It inevitably follows that boosting scholastic achievement by more than a small degree is impossible through compensatory educational methods (Jensen, 1969). According to this argument, those children from low socioeconomic groups who perform poorly in school do so largely because they lack the genetic ability to perform otherwise. Jensen does not ignore social factors altogether, but he feels that genetic endowment is the decisive factor. Herrnstein (1971) argues that contemporary political and social policies will lead increasingly to the establishment of a "virtually hereditary meritocracy." Arguments along these lines have also been produced to demonstrate the intellectual inferiority of certain ethnic or racial groups. According to opponents of this argument, it is almost impossible to determine the relative shares of environment and heredity in measured intelligence (despite statements made by Jensen to the contrary). Since, as Bowles and Gintis (1972) have pointed out, one of the basic premises of the genetic inferiority argument--that intelligence is automatically rewarded with privilege--is demonstrably false, the value of explanations based on this argument would appear to be slight.

2. Another explanation of the socioeconomic status/achievement correlation is one that concentrates on the different cultural environments of children from various socioeconomic groups, and the effect that these cultural factors may have on school performance. One problem here is that the term culture is often used loosely, and the supposed class cultural differences range from vague concepts such as motivation, to more closely defined distinctions such as variations in speech patterns. Much attention has been paid to language use as the "means by which the diverse influences of the sociocultural environment are synthesized and reinforced" (Bernstein, 1961). Based upon his observations of lower working-class and middle-class children in Britain, Bernstein (1961) suggested that "the middle-class child and the lower working-class child are oriented to different orders of learning as a result of the implications of their forms of language use" (p. 307). Bernstein maintained that the overall class structure of society penetrates the structure of life experiences within the family, and therefore, middle-class children and working-class children undergo different socializing experiences. Accordingly, the mass of the population has been "socialized into knowledge at the level of context-tied operations," whereas only a small, privileged minority has been "socialized into knowledge at the level of the meta-languages of control and innovation" (Bernstein, 1977, p. 477). He went on to postulate the existence of two orders of meaning, one universalistic and the other particularistic. Children, according to Bernstein, are socialized toward speech codes that control access to either relatively context-tied or relatively context-independent meanings. The elaborated codes, typical of middle-class speech, free speech from its evoking social structure, and have their basis in articulated symbols. Restricted

codes, on the other hand, are more tied to a local social structure. Both working-class and middle-class children may in fact possess similar vocabularies and share the same linguistic rule system, but they, nevertheless, may use language differently in specific contexts. The educational implications are that a working-class child will be at a relative disadvantage in school, since schools are predicated upon elaborated codes and the working-class child is accustomed to the restricted code. Bernstein argued that "linguistic performance is basic to educational success" (1961, p. 291), a position which he has termed linguistic determinism. Some characteristics of British working-class speech that Bernstein (1961) noted are an inability to hold a formal subject through a speech sequence, thus facilitating a dislocated informational context; frequent use of statements where the reason and the conclusion are compounded to produce a categoric utterance; and a simplicity of sentence construction, use of conjunctions, adjectives, and adverbs. It is also a "language of implicit meaning" (Bernstein, 1961). Bernstein also used the somewhat confusing term public language to denote the supposedly more context-based language characteristic of the working class; he contrasted it with what he termed formal language, where meaning is classified and made explicit. In an article published in 1977, Bernstein illustrated the difference between the two types of language with two stories constructed by a sociologist and the London Institute of Education through analysis of the speech of middle-class and working-class five-year-old children. All the children were shown the same series of pictures and asked to tell a story about them. It was found that the middle-class children tended to tell a story that would be intelligible even to someone who had not seen the series of pictures; the working-class children, on the other hand, told stories that were much more closely tied to the context of each picture. According to Bernstein, given that linguistic performance is basic to educational success and that grossly different environments affect aspects of language structure and vocabulary, it follows that children from different classes will not perform at the same level in school. Not only will a working-class child experience difficulty in the formal language arts, expected by teachers in schools, he or she will also encounter difficulties in mathematics beyond the mechanical understanding and manipulation of numbers. The child will also be at a disadvantage in dealing with any verbal problem requiring logical ordering before the use of arithmetical operations. Bernstein further stated that these same sociolinguistic factors are responsible for the poorer performances of working-class children on IQ tests. Bernstein emphasized the narrow limits of time, place, and specific context of working-class orientations that lead to a discordance between working-class outlook and that of the schools (Bernstein, 1977). Closely related to the arguments put forward by Bernstein are those that relate school failure among lower-class children to qualitative intellectual differences in these children, caused by deficiencies in the culture in which they are being raised. The culture of poverty argument, which postulates a deficient intellectual environment for lower-class children, has, in various forms, attracted considerable attention. Whereas British studies of class cultural differences relevant to educational opportunity have largely focused on linguistic patterns, studies in the United States that have utilized the conception of a culture of poverty have had important implications for educational research and government policy. Formulated by Lewis (1966), the notion is, as Westergaard and Resler (1975) pointed out, a variant of commonly held stereotypes about the poor, who are believed to be maintaining the very conditions that consign them to failure. The alleged deficiencies of lower-class life that are thought to have relevance for the educational performance of lower-class children include a lack of verbal interaction between mother and child and among family members in general, a lack of interest in intellectual activity for its own sake, a lack of parental involvement in the schools, and a lack of emphasis on reading. According to Riessman (1962), a pragmatic intellectualism prevails among the culturally deprived. All these deficiencies combine to lock the lower-class child into a self-perpetuating cycle of educational failure and poverty. It is assumed that if the deficiencies could be corrected, the lower-class child could be expected to improve his performance in school.

Various researchers have attempted to demonstrate a correlation between social class and methods of socialization, the assumption being that children in different socioeconomic groups are raised differently. Zigler (1970) summarized many of the findings of these researchers and described much of the material as "contradictory and too inconsistent" (p. 93). Zigler himself favored what he terms a developmental approach to social class differences, an approach that has been strongly influenced by the work of Piaget and that is an attempt "to understand some of the effects of the sociological variable of social class membership in terms of the psychological variable of personal development level" (p. 101). The assumption is made that lower-class children are developmentally younger than middle-class children of the same chronological age. According to Zigler, proponents of this developmental approach have purposely avoided speculation concerning the causes of the developmental differences between middle- and lower-class children. One may question whether the approach really contributes anything of significance to a discussion of class behavioral differences. Explanations of lower-class behavior in terms of a culture of poverty argument have been criticized for leading to the formation of a caricature of working-class life and for failing to grasp the roots of the problems of poverty and educational failure.

Drucker (1971) and others criticized those who maintain that working-class language is inadequate for conceptual development. In particular, Drucker opposed the view that lower-class children can only think in concrete terms, that abstract concepts are too difficult for them to grasp, and that working-class children's thought is organized primarily in terms of sensory features of the world. Drucker relates such attempts to categorize working-class language as inadequate to early stereotypes about the thought processes of primitive peoples. Drucker did not deny that lower-class and upper-class children often tend to give predictably different answers to various test questions, but he denied that these differences reflect "differences in level of conceptualizing and abstracting ability, or in the capacity for the adaptive use of thought" (Drucker, 1971, p. 42). He maintained instead that the differences reflect "an arbitrary dichotomy which has been imposed by a particular theory and a particular social system upon a mass of data which lends itself to many interpretations and differentiations" (p. 42). Leeds (1971) pointed out that the apathy, the inability to defer gratification, and the orientation towards the present--all characteristics supposedly found among the poor--may be seen as practical responses to certain social situations. In fact, they are characteristics shown by most people under certain circumstances.

Any consideration of the cultural aspects of poverty must also take into account the effects of the actual physical conditions of poverty. It has been demonstrated by Pasamanick (1969), among others, that a defective diet may affect a child's ability to respond appropriately in a school situation. Furthermore, overcrowding and inadequate living conditions in general will have a disadvantageous effect on the academic performance of poor children. However, there is a vast difference between acknowledging the harmful effects of lower-class living on children's academic performance and ascribing all these harmful effects to the self-perpetuating culture of the poor.

In the United States, an acceptance of the theory of cultural deprivation of lower-class children has helped to initiate compensatory education programs such as Head Start. All of these programs associated with the "war on poverty" have been criticized for attempting to cope with a massive problem by combating the culture of the poor, rather than by altering the fundamental arrangements of society (Valentine, 1971). Programs such as Head Start are intended to help alleviate the culture clash experienced by lower-class children when they enter school where the outlook and aspirations are those supposedly more familiar to middle-class children. Studies of the effects of the educational impact of Head Start programs show somewhat ambiguous results. According to Bronfenbrenner (Note 1), an initial gain in performance as measured by IQ scores tends to disappear after the first two or three years of elementary schooling. Of course, this fact in itself does not necessarily demonstrate the futility of compensatory education, since it could simply mean that the compensatory program did not last long enough. Moreover, Zigler (1978) maintained that adherents of the "fadeout" notion have "ignored a relatively large and consistent body of evidence which indicates that the benefits of participating in a preschool intervention program have much greater staying power than currently popular views would have us believe" (p. 72).

3. The third set of explanations for the correlation between socioeconomic class position and educational attainment centers around the theory that lower-class children receive inferior treatment from the educational establishment, that they are more likely to have inadequately trained teachers, to be placed in crowded classrooms, and to have less money spent on their education than are middle-class children. Although both the Coleman Report in the United States (1966) and the Plowden Report in England (1967) concluded that family background was more decisive than school characteristics in determining success or failure among school children, and thus gave support to the belief that explanations of school failure should be given in cultural terms, it is nonetheless possible, as Karabel and Halsey (1977) have pointed out, that all schools may inhibit the academic performance of poor children. Leacock (1969) maintained that the reason many lower-class children fail to achieve in school is that their teachers, consciously or unconsciously, project a basically nonsupportive attitude towards them. From the observations of pupil-teacher interaction in city schools, Leacock concluded that lower status roles were being structured for these children. According to Leacock, the low expectations held by teachers for lower-class children create a self-fulfilling prophecy, since children tend to perform according to the expectations held for them. Support for this theory of a self-fulfilling prophecy came from Rosenthal and Jacobson (1968). The research carried out by Rosenthal and Jacobsen involved administering a test to 500 children in an elementary school. The teachers were then informed that a small number of children had been diagnosed as being likely to show academic improvement during the following year. When the children were tested at the end of the next year, it was found that the children for whom the teachers had high expectations had in fact improved academically, even though there had been no factual basis for the original determination of their success. Other researchers have also demonstrated the influence of standardized tests of intelligence and achievement on teachers' expectations and have documented, along with Leacock, that teachers expect less of lower-class children than they do of middle-class children. Rist (1977) suggested that research on the self-fulfilling prophecy be incorporated into the wider field of labeling theory, and stated that the analysis of teacher expectations produces results which are similar to those found in the study of deviance.

Although Leacock recognized that the condition of poverty itself creates scholastic difficulties for many children, she nonetheless thought that the schools serve only to aggravate these difficulties. Arguments similar to Leacock's have been offered by Levy (1969) and Rist (1973) and have been popularized by writers such as Kohn (1967) and Kozol

(1966). Rist's account of teaching methods in a St. Louis school demonstrated the complex relationship between the attitudes and behavior of teachers and the class positions of the children. What emerges from his account is that the poorest children do in fact enter school with more limited vocabularies and general knowledge than the children from more affluent homes. But, according to Rist, it is not so much the inadequacies of the children but the indifference with which they are treated that is responsible for their poor academic performance.

Ogbu (1978) has presented an argument which may be seen to be related to those put forward by Leacock and Levy, even though his theoretical framework is different from theirs. He suggested that performance in school is directly related to future expectations; black children perform (on the average) less well than white children since they lack what Ogbu terms "incentive motivation." Using data from Great Britain, New Zealand, India, Japan, and Israel, as well as the United States, he argues that whenever a group possesses low caste status and has limited job opportunities, its children will perceive the limitations imposed upon their advancement, and will, accordingly, fail to develop competitive skills. In order to reinforce his position, Ogbu points out that black females in the United States, whose job opportunities are less limited than those of black males, perform better in school than their male counterparts. It would seem that the chief difference between Leacock's argument and that of Ogbu is that the former relates school failure to low teacher expectation, while the latter relates it to the students' own low expectations of their future chance of success in a racist society.

4. Explanations of lower-class school failure in terms of unequal treatment in school are often part of a wider analysis of the educational system as a means of maintaining class differences. Those who hold this view of education maintain that as long as society remains divided along class lines, lower-class children must, of necessity, perform poorly in school. Levy (1969) argued that

> When ghetto education fails to accomplish its public goals . . . people blame the inadequacy of the education if they are liberals, and the inferiority of the children if they are conservative. Few educational ideologies focus on the political task of ghetto schools. (p. xiii)

This task, according to Levy, is to fail to train their children for middle-class life. The more the educational system is popularly viewed as providing a channel for social mobility, the more likely it is, according to this argument, that personal failure will be accepted with resignation. It would seem that acceptance of failure as the fault of the individual might be more likely to occur in lower-class children of the same racial or ethnic group as the middle and upper classes; where racial and ethnic distinctions serve to blur class distinctions, one might expect that individuals in an underprivileged group might be less willing to blame themselves for scholastic failure, and more likely to blame a society that relegates those groups to a subordinate status. But in the view of writers such as Clark (1960), the schools by internalizing failure help to legitimize inequality in a society which should theoretically be equal.

As viewed by scholars such as Bowles and Gintis, it is fruitless to attempt to analyze educational systems without first considering social relations of production. Along with Althusser, who has termed schools "ideological state apparatuses," they regard the educational system as serving to reproduce division of labor in a capitalist society. Bowles (1977) stated that "inequalities in education are . . . seen as part of the evils of capitalist society, and likely to persist as long as capitalism survives" (p. 137). Bowles regarded the separation of the worker from control over production and the resulting social division of labor between the controllers and the controlled as a crucial element in shaping the role of schooling in capitalist society. Viewed in this light, education is seen as a mechanism that helps to insure social control and political stability. By determining the positions of children within the class system, education serves to legitimize the social structure. Bowles pointed out that children from the 90th percentile in the class distribution (social class being defined by the income, occupation, and educational level of the parents) may be expected to receive over four and one-half more years of schooling than children from the 10th percentile. Moreover, according to Bowles, those children who remain in school (or college) longer receive an increasingly larger annual public subsidy.

Bowles also argued that the social division of labor gives rise to distinct class subcultures, with different values, personality traits, expectations, and childrearing practices, all of which affect children's responsiveness to a school situation. Since the social class differences in scholastic achievement are greater than would be accounted for by differences in financial resources alone (Coleman, 1966), Bowles (1977) maintained that

> Class differences in the total effect of schooling are . . . due primarily to differences in . . . class subculture. The educational system serves less to change the results of the primary socialization in the home than to ratify them and render them in adult form. The complementary relationship between family socialization and schools

> serves to reproduce patterns of class culture from generation to generation. (p. 147)

This argument may appear to be closely related to those of Coleman (1966) and of Bernstein, and to adherents of the culture of poverty theory, even though Bowles' basic ideological framework is quite different, if not from Bernstein's, at least from most American proponents of a theory of cultural deprivation. The implications for policy are very different. Those who accept a culture of poverty explanation for the school failure of lower-class children usually believe that compensatory programs such as Head Start can help to remedy the situation; Marxists such as Bowles are more pessimistic. In his view, as long as society remains divided along class lines, lower-class children must inevitably perform poorly in school, and no amount of intervention, short of rearranging the economic structure of society, can help them to any significant degree.

In view of the fact that inequalities of educational opportunity and performance have been demonstrated to exist in socialist countries such as the Soviet Union, it is probably more accurate, as Bowles and Gintis have in fact pointed out, to relate educational inequality to a hierarchical division of labor, which exists in the Soviet Union as well as in capitalist countries, rather than simply to capitalism. It is obviously a simpler matter to abolish capitalism than it is to eliminate a labor hierarchy.

Although the explanation of educational inequality offered by writers such as Bowles and Gintis is satisfying in its apparent comprehensiveness, on closer examination it possesses many of the drawbacks common to other explanations of the problem. Although most writers on the subject would acknowledge that it is possible for some lower-class children to achieve, and some writers will even say that the class system needs to allow some upward mobility as a "safety valve" for class discontent, few of the arguments presented in any way help to explain individual successes or failures. Obviously, socioeconomic status must be considered in conjunction with other factors, such as individual differences in personality and learning style. Marjoribanks (1972) has demonstrated that the learning environment of the home can affect a child's performance on certain mental ability scores. He identified eight environmental forces and examined their effect on test scores. His results show that verbal, number, and reasoning abilities are the most influenced by the environmental forces he has isolated, and that spatial ability is the least affected. It may be that personality characteristics that contribute to academic success in one socioeconomic group are not necessarily those that would guarantee success in an individual from another socioeconomic group. Individual differences in verbal and cognitive style presumably interact with socioeconomic and other factors to affect any one individual's chances of academic success or failure. A discussion of individual verbal and cognitive styles is outside the scope of this chapter, but it may be relevant to consider research that seeks to explain the relationship between these individual differences and class distinctions in the educational system. According to Witkin (1965), individuals may possess one of two basic types of cognitive style: field-dependent and field-independent. A field-dependent individual, Witkin maintains, is one whose cognitive and perceptual processes are poorly differentiated and articulated. A field-independent individual has a greater ability to abstract important features from surrounding detail; he apparently also possesses a greater sense of his own separation from the outside world and thus is better at sorting problems requiring the isolation of essential elements. Witkin claims that there is no significant correlation between these two basic types of cognitive styles and socioeconomic status.

Drucker (1971) has illustrated the range of stylistic and personal responses that children may demonstrate in test situations. He maintained that these responses are associated with certain class-bound styles. Furthermore, he stated that in some circumstances different styles may "become maladaptive, and lead to functional failure for quite different reasons" (p. 53). Drucker cited the different responses he obtained from children to whom he was administering a test of number conservation. Development of the concept of conservation is generally considered to demonstrate a certain level of conceptual maturity, and some researchers have found that lower-class children tend to do less well in tests of number conservation than do adults. Drucker, however, pointed out that the individual, as well as the class-bound differences in children's responses to the tests, must be considered in any interpretation of findings based on the tests, and emphasized that conventional techniques of testing and measurement have yielded distorted impressions of ability.

Lacey (1970) studied an English selective high school and attempted to seek out the reasons why working-class boys did not achieve as well as middle-class boys. What is impressive about his study was that he was aware that socioeconomic class is only one of many variables determining educational success. By contrast, school studies such as those by Leacock, Levy, and Rist appear sadly one-dimensional. Lacey is concerned to discover the factors leading not only to working-class failure, but to working-class success, and, in turn, to both success and failure of middle-class boys. In the school studied, cases of middle-class high achievers with a high level of parental encouragement were fairly common, as were cases of working-class low achievers with a low level of parental encouragement. However, these cases by no means exhausted all the possibilities, and cases of working-class high achievers with low parental encouragement and of middle-class low achievers with high parental encouragement also occurred though admittedly with less frequency. Lacey viewed the boys and their parents as competing teams in the educational process, with the boy "filling the role of competitor and the parents that of coach" (p. 125). Lacey isolated three types of resources of the family teams--psychological, social, and cultural. Although the family's social position is only one of the factors influencing achievement, it may not always be possible to isolate it from the psychological and cultural resources of a family.

One of the cases given by Lacey, that of a working-class high achiever with a low level of parental encouragement, is interesting in that it demonstrates yet another set of factors leading to achievement; namely, encouragement and support from the teachers. In the particular case described, the boy is able to achieve in spite of an apparently disadvantaged home background and an uncooperative father. The support and encouragement from the school, combined with the boy's own high intelligence, ability, and psychological strength to withstand the ambivalence between his school culture and that of his peer and neighborhood cultures, all served to contribute to high achievement in this particular boy's case. However, as Lacey pointed out, it would not have been surprising--in fact, it would have been more usual--if the boy had joined the antigroup culture within the school, to which many of the working-class boys were predisposed. On two occasions the boy was on the threshhold of deterioration, but fortunately never fully embarked on the path that Lacey outlined as "bad behavior → punishment and damaged reputation → low motivation → poor work → and no homework → more punishment → eventually inability to do the work" (p. 143), a path that many of the working-class boys followed.

In discussing the value of support and encouragement from parents, Lacey made the point that middle-class parents are able to demonstrate their support in more effective ways than are the working-class parents. He cited instances of middle-class parents exerting successful pressure on the school to place their son in an advanced class, demonstrating the ability of "articulate, ambitious, middle-class parents" to "manipulate the ideology of the school" (p. 76). In the school which Lacey studied, streaming (tracking) of pupils was practiced, and the parents were concerned less with the diagnostic and pedagogic aspects of the process than they were with its associated subcultural effects. Whereas both working-class and middle-class parents were likely to have fears about the socially undesirable consequences of a boy's being placed in a low stream (track), the middle-class parents tended to be more aware that any objections they had should be expressed to teachers in purely educational terms. The working-class parents tended to be less sophisticated and to state openly their reasons for not wanting a boy to be placed in a particular class, thus failing to convince the teachers of the reasonableness of the arguments. In general there appears to have been a greater willingness on the part of the teachers to listen to middle-class parents who were able to manipulate the ideologies accepted by the teachers. "Their status in the general social structure . . . helped to make this manipulation acceptable" (p. 136).

Instances that did not conform to the established correlation between academic achievement and social class, i.e., a working-class boy from a large family succeeding in school, or an upper-middle class boy from a smaller family failing, highlighted an important point for Lacey:

> There is a degree of autonomy in the system of social relations in the classroom which can transcend external factors and even differences of intelligence. External factors, such as social class, and intelligence have to be fed through the internal system of relations within the classroom. If the possessor of advantages in the external system fails to feed them in correctly (some factor in the internal system might intervene) they can be misunderstood or even ignored. On the other hand, positive rewards can come from skill in manipulating internal relations; they can make up for lack of external advantages and even intelligence, as measured by an IQ test. (p. 56)

Lacey demonstrated that differentiation and polarization occurred as students moved through the school, and "the resulting pro- and anti-school subcultures were also linked to class differentiation" (p. 187). By differentiation, Lacey meant the separation and ranking of students according to a multiple set of criteria that makes up the normative, academically oriented, value system of the school. It is a process which is carried out mainly by the teachers, whereas the polarization process occurs within the student body itself, and includes the formation of an antigroup culture. Students may join such a group because they are doing poorly academically, and once in the group their work will tend to deteriorate even further.

Lacey contrasted his model of the school with the idea of the deferred gratification pattern, which has been suggested as characteristic of middle-class behavior, and an absence of which may be considered to contribute toward a culture of poverty. Lacey found very little evidence in the school he studied that deferred gratification in any way determined success. Instead, he observed students competing for a flow of short-term gratifications and he agreed with Rodman (1963) that the working class has probably internalized achievement norms similar to those of the middle class, but, owing to their position in a stratified society, are satisfied (and rationally so) with less actual achievement.

Considerable attention has been given here to Lacey's work because it is one of the few studies that seeks to give more than a simplistic account of the relationship between academic achievement and other factors. Although recognizing that, on the whole, working-class children do not perform as well as middle-class children, Lacey provides a model that nonetheless accounts for the successful working-class child, as well as the middle-class failure. Rather than denying the importance of class as a determinant of educational achievement, Lacey emphasizes the complexity of the relationships among class, individual personality characteristics, and the social system of the school.

The complexity of factors determining educational achievement is also stressed in the report of a study of high- and low-achieving black low SES children that was carried out by Shipman, Boroson, Bridgeman, Gant, and Mikovsky (1976). They concluded that a multiplicity of positive and negative factors were responsible for the academic performance of the children studied. "It is not a particular parent, teacher, or child's attitude, attribute, or behavior, or a particular social setting, but the cumulative effects of their multiple interactions" (p. 50) that determine success or failure, and "for different children, different clusters of variables appear to be differentially effective, suggesting the need for multidimensional assessment of individuals and their environments" (p. 51). Shipman et al. suggested that a child's cognitive gains are likely to be largest when there is support "in the total ecology of the child" (p. 52).

Rossi (1961) has attempted to set out determinants of achievement (including socioeconomic status), that can be related to differences among students, teachers, schools, and communities. He maintained that the most important variable in determining educational achievement is the IQ of the student, since variations in IQ levels accounted for between 40% and 60% of variations in levels of achievement. Part of the remaining variation may be attributed to other factors, such as socioeconomic status, achievement motive, teachers' characteristics, educational practices, and community differences in academic achievement. Rossi did not consider the implications upon his statements about IQ of the fact that research would establish a relationship between socioeconomic status and IQ. Obviously, if differences in IQ scores may be attributed, to whatever degree, to differences in socioeconomic status, then the role of socioeconomic status in determining achievement would be greater than Rossi implies.

Rossi pointed out that regional differences within the United States are related to differences in educational achievement, with students in the north scoring higher than those in the south. Here again, the socioeconomic differences between regions may account for much of the discrepancy between north and south.

Sewell (1971) carried out a longitudinal study of approximately 9,000 high school students in Wisconsin in order to examine inequalities in opportunities for higher education and to establish significant variables. It was demonstrated that

> When we divide one cohort into quarters ranging from low to high on an index based on a weighted combination of our indicators of socioeconomic status, we estimate that a high SES student has almost 2.5 times as much chance as a low SES student of continuing in some kind of post-high school education. He has an almost 4:1 advantage in access to college, a 6:1 advantage in college graduation, and a 9:1 advantage in graduate or professional education. (p. 795)

The above-mentioned indicators of socioeconomic status are parental income, father's and mother's educational attainment, and father's occupation. Each of the four socioeconomic background variables was found to have approximately equal effect on educational attainment, and taken together, accounted for 18% of the total variance in years of post-high school educational attainment. Although Sewell's study demonstrated that socioeconomic status plays an important part in inequality in higher education, it also showed that its role is far from simple and direct. "Its effects tend to be mediated by largely psychological factors, which in turn also have independent influences on the processes of educational attainment" (Sewell, 1971, p. 800). Included among these social psychological factors are the development of cognitive skills, academic performance, the influence of significant others, and educational and occupational aspirations.

D. Cohen (1972) made the similar point that

> ability and status combined explain somewhat less than half the actual variation in college attendance. As in the case of curriculum placement, we must turn to other factors--motivation, luck, discrimination, chance, and family encouragement or the lack of it--to find likely explanations. (p. 55)

Cohen's use of the term luck as a variable in educational achievement is similar to Jencks's use of the term to explain a major source of income inequality, and has been criticized by Karabel and Halsey (1977).

> The identification of unexplained variance with 'luck' seems a peculiar one for a sociologist, but it is a logical result of Jencks's decision to gather data only

> about individuals. Yet as Bourdon (1974) has argued in a review of Jencks, relationships that are objectively indeterminate for the individual may be anything but random when viewed from the perspective of social structure. (p. 24)

An illuminating study of the factors governing academic success among members of an underprivileged group--in this case black Americans--was carried out in the 1960s by H. Bond (1972). He studied the origins of and education received by black Ph.D.'s and found that academic success was not distributed at random throughout the black population, but was highly correlated with the type of early schooling received. The religiously motivated missionary scholars of the lower south, according to Bond, "established and sustained in the students far higher levels of self-expectancy than their accustomed milieu demanded of them" (p. 121). That is to say, those children fortunate enough to live near these scholars did better than those who did not, and the type of schooling received was crucial. This may seem a commonplace observation, but it is one which may need to be stressed in a climate of pessimism about the efficacy of schooling and in view of analyses of black academic failure such as that by Ogbu. Bond did not, however, attribute success to superior schools alone, but also to the intangibles of high expectancy, aspiration, motivation, and attainment among teachers and in families. In fact, Bond's conclusions may be regarded as representing a synthesis of the views of many other writers on education, correcting the one-sidedness that is often a feature of educational writing. Bond's work is valuable in that he recognized the common disadvantages shared by all black Americans, but he did not regard them as representing a solid, undifferentiated mass, and was sensitive to the differences that account for achievement, or the lack of it. Moreover, he demonstrated the necessary interdependence of family, community, and school in producing academic achievement and social mobility. Thus, it is neither the family nor the school that effectively produces a successful pattern of education, but the two in combination as part of the total fabric of social and educational life.

The fact that there are variables other than socioeconomic status that determine academic achievement should surprise no one, but it appears sometimes that the recognition of these other factors leads to a tendency to dismiss the importance of class in education. Ravitch (1978), for instance, quoted Featherman as noting that the Sewell study found "only 18 percent of all the educational differences in his sample to be associated with class factors per se" (p. 114). Leaving aside the question of whether this is a truly representative statement of Sewell's findings, there are many who would question the use of the term "only" in the quoted sentence. It would seem that the ideological stance of the interpreter affects the degree to which he ascribes importance to the variables of class. For some, it is intolerable that 18% of all educational differences should be associated with social class; for others, it is insignificant.

If there is one outstanding conclusion to be reached after this somewhat cursory review of some of the literature pertaining to the relationship between class and educational attainment, it is that socioeconomic status is only one of many aspects of human diversity that contribute to educational achievement. It is, however, an extremely important aspect, one which should never be overlooked in evaluating the most appropriate educational treatment for any particular individual. It is equally clear from the literature that the exact nature of the relationship between socioeconomic status and educational achievement has not been fully researched, since different researchers have tended to concentrate on one aspect of the relationship to the exclusion of others. There has been a tendency to attribute everything to cultural deprivation, or to poor schools, or to attitudes of teachers, or to the children's low expectations, or simply to the evils of a class system in general. All these factors undoubtedly play a part, but their relative significance is not clear. It is apparent that there is ample room for further research in this area.

In order to assess the most effective educational approach for any given individual, it would be desirable to develop a framework within which all the factors relevant to educational performance could be included. In order to be a useful tool, all of the status and functional categories included would have to be very precise and sharply defined. At present, socioeconomic status is certainly not precise and sharply defined. As the earlier part of this chapter has demonstrated, the concept of class had different meanings for different theorists. Moreover, it is by no means clear that the usual measures used to determine socioeconomic status (father's occupation, parents' education, father's income) do in fact adequately characterize status. Karabel and Halsey (1977) cited Muller's study of a German town in which unmeasured family residual effects accounted for an additional 24% of the variance in the case of occupational statuses of brothers. Karabel and Halsey remarked: "What this finding strongly suggests is that these are elements in family background that though they are important in the determination of adult status, are not captured by the usual techniques" (Karabel & Halsey, p. 24). They also pointed out that Bowles also suspected that the usual methods of measuring the effects of socioeconomic status systematically underestimate them. Bowles suggested that "the transmission of personality attributes, determined in part by parental position in the hierarchy of work relations, is an important component of family background" (cited in Karabel & Halsey, 1977, p. 24). The fact that the measures of socioeconomic status have yet to be fully and clearly defined may or may not account for difficulties in comparing class status between different ethnic groups. For example, Ogbu (1978) claimed that class status cannot explain why blacks as a group do not perform as well as whites, especially where the two groups have comparable class characteristics. But Rist (1973) quoted findings by Cohen, Pettigrew, and Riley to the effect that "when controls for the influence of social class were imposed, the impact of racial differences became nearly nonexistent" (cited in Rist, 1973, p. 16). This statement and Ogbu's are so contradictory, that it is obvious that they are not using the same type of conceptual schemes. If one accepts the view that classes are emergent, and not fixed, then the comparison between, say, the black lower class and the white lower class, becomes specious. What then may become significant is differential historical experience.

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CHAPTER 4

The Pedagogical Relevance of Sex Differentiation

Nancy Bordier

Sex Differentiation and Educational Opportunity

Sex differences have always been the object of curiosity and, at least within some circles, contention. Genetic/biological differences between males and females, as well as social differences in the roles they play, have been used, for example, by protagonists in what has been termed "the war between the sexes" as evidence of the alleged superiority (or inferiority) of one sex as opposed to the other.

Recently, debate about sex differences has become more acrimonious than in the past. This is due, at least in part, to changes in women's roles within the family and in economic, political, and social life, and to challenges of the traditional notions about what men's roles should be--within the family, as well as in their relationships with women in economic, political, and social spheres. As the protagonists seek not only to inform but to persuade on the basis of scientific argument, contending viewpoints about their social roles bring up basic questions about whether there are important sex differences--genetically, biologically, and behaviorally--and whether these differences are functional for individuals themselves and for society. Most people agree that the roles of the two sexes have differed in the past, but many people are questioning whether these differences are as extensive as popular images hold them to be. Furthermore, many people are questioning whether real and apparent differences are inevitable or desirable, whether they will continue in the future, and, if choice exists, whether they should continue to exist. Can one say that sex-differentiated roles are inevitable because genetic/biological differences can be shown to determine them? Or because cultural values and socialization processes determine them? Or because genetic/biological and cultural phenomena interact in predetermining ways?

Clearly, some groups and individuals tend to call attention to differences that appear to be stable and apparently universal, especially those differences that they wish to attribute to genetic/biological factors. (See, for example, Tiger, 1970.) For insofar as these attributes are valued and socially utilized in different ways, individuals possessing them can be ranked differently in societal stratification systems and can be conferred different status and prerogatives.

Still other groups seem equally determined to contest rigid characterizations of sex differences. (See Mead, 1949/1970.) They point to the variable contribution of both genetic/biological and cultural factors in influencing behavior. The lack of stability and frequency in the appearance of assertedly sex-linked traits is thought to weaken attempts to assign trait differences to the two sexes. The variations are thought to suggest greater relativity of perceived sex differences, as well as greater mutability in these differences, through either natural processes or deliberate intervention.

Some groups even contend that the search for sex differences per se is a sex-biased attempt to justify and create sex-role development and hence limit the developmental potential of both sexes (Safilios-Rothschild, 1978). These groups appear to have a more fluid view of human developmental possibilities than others, insofar as the latters' perceptions of the future projects sex-biased divisions of labor regardless of whether the two sexes have opposing, complementary, or identical roles.

In these opposing perspectives, consequently, one can see very different images, hopes, and fears for the future. One group of protagonists seems to be preoccupied with ascertaining whether future divisions of labor should find women developing qualities and skills so that they behave more like men in the marketplace, or whether they should continue to be homebound and community-bound as progenitors and organizers of consumption; whether men should develop qualities and skills so that they behave more like women in the home and community, or whether they should continue to be absorbed in the marketplace (Ross, 1976). The last group mentioned, however, shows little inclination to limit its vision of the future to a projection of sex-biased perspectives on the past and present.

Therefore, sex differences continue to attract attention and contention, because many people have a vested interest in using an understanding of such differences to justify erosion of them through either natural or contrived processes. This degree of partisanship does not necessarily provide a fruitful context for scientific inquiry. Yet systematic examination of the nature of sex differences is urgently needed, particularly with respect to their variability and malleability, since it is clear that perceptions of these differences and the extent to which they are manipulable affect the way individuals are treated. Expectations as to what behaviors are appropriate for each sex, as well as what behaviors are possible and desirable, affect the way individuals develop within societal institutions. Real and imagined sex differences, as well as similarities, do affect individual and institutional management of human developmental processes, and the realization of human potential. A society seeking to maximize human development requires as much knowledge as possible of all those factors found to affect developmental possibilities. Sex differences and similarities must be scientifically examined, as well as the extent of the variations in the stability and frequency of their appearances and their causes--particularly those that are subject to human and institutional control.

The pedagogical relevance of sex differences derives its theoretical and practical significance from this framework of analysis. Clarification of sex differences, similarities, variations, and mutability is required to counteract conceptual and empirical distortions concerning sex-role differentiation. This task is of particular significance in the context of the argument made by growing numbers of groups and individuals that alleged sex differences have been used in unfounded, stereotyped ways as the basis for allocating statuses and roles among males and females in such a way as to restrict the developmental possibilities of both sexes, particularly females. (See Fishel & Pottker, 1977.) Status allocations are said to reflect arbitrary bias, based on stereotyped notions that attribute genetic/biological as well as culturally-acquired, behavioral differences to males and females in such a way as to deny either or both full access to the statuses and opportunities that they are capable of assuming. These groups and individuals allege that sex-differentiated role allocations reflect unfounded beliefs about genetic/biological and culturally-induced differences as well as arbitrary social practices, which act as self-fulfilling prophecies, channeling the development of both males and females into stereotyped patterns narrower than the full range of qualities, needs, and abilities they may possess or be capable of developing. They claim that the development of both sexes is constricted by these expectations insofar as they are embedded in pervasive cultural values and structured developmental processes propagated by formative societal institutions, of which the school is a prime example.

Restriction and constriction of males' and females' development by the school is evidenced by sex differential in academic achievement and in access to occupational status and opportunity. Sexual stereotyping of schooling outcomes is documented by 1975 data from the National Assessment of Educational Progress. Relative equity in early school years between the two sexes is superseded by sex differentials in major subject areas. Members of each sex tend to develop specializations in different areas and to outperform the opposite sex in that area. (However, females' leads are eventually lost, and males' leads are retained.) Though aptitude test scores of young boys and girls tend not to show significant sex differences, even on tests of mathematical reasoning and spatial relations significant sex differentials emerge (Boocock, 1976, Chapter 5). Males and females perform equally in mathematics, science, social studies, and citizenship until the onset of adolescence. However, by age 13, female performance in these areas begins to decline, never to recover. In middle elementary school years, females begin to outachieve males in reading, writing, literature, and tests of verbal ability. However, by age 9, their performance begins to decline until by age 26-35 they lag behind males. Sex-typing of achievement in different subject areas precedes sex differentials in future educational opportunities. In the nation's vocational education programs, 71% of the 136 instructional areas have at least 75% of their students of one sex or the other. "Females predominate in those programs providing preparation for the lower-paying occupations" (Matthews & McCune, Note 1, p. 3). Almost one-half of the instructional areas have 90% of one sex or the other. Furthermore, in the past, a higher percentage of boys than girls of equal ability tended to enroll in the college preparatory track of high school. Males tend to win more merit scholarships, receive greater amounts of financial assistance for higher education, have lower grade point averages than women entering college, and complete more years of college and postgraduate study.

In the labor market, sex stereotyped, constructive development has also been documented. According to the 1978 Statistical Report of the National Center for Educational Statistics, males tend to occupy disproportionate numbers of blue collar jobs, compared to females, and females a disproportionate number of white collar jobs, compared to males. Additional sex differentiation within occupational categories has been noted, as specific jobs comprising the different categories have been shown to be sex-typed. According to census data, women are much less likely than men to be in the major, high status white collar occupational group, "managers and administrators . . . " (Wolf & Fligstein, 1979, p. 236). Even in the social sector professions where women tend to be overrepresented in proportion to their total number in comparison to men, the occupants of the higher-level supervisory positions in these professions tend to overrepresent men, in proportion to their total number. In general, even when women have the same educational and occupational status, they are much less likely than men to be in positions of authority.

These data indicate that males and females have developed dissimilar abilities, skills, and interests that equip them inequitably to attain access to educational and occupational opportunities and status. For many groups in society, the responsibility for these diverse, and in some spheres inequitable, patterns of sex-role development lies with such formative institutions as the schools. So convincing have their arguments been that legislation such as Title IX of the Education Amendments of 1972 has been passed mandating the prohibition of arbitrary bias in the allocation of educational opportunities to the two sexes. The legislations contain numerous assumptions regarding sex differences, some of which are supported by existing scientific evidence and some of which have not begun to be explored. One of these assumptions is that existing sex differences can be environmentally manipulated, and that enough is known about the nature of sex differences, including their variability, mutability, and malleability, as well as about educational processes, so that schools can institutionally manage the development of males and females in order to reduce and eliminate arbitrary and individually undesirable sex differentiation of behaviors. Yet it is not clear that this assumption can be supported on the basis of existing evidence. It can be seen from a passing glance at the literature that inquiry into sex differentiation is at a rudimentary stage, not to mention inquiry into the processes for deliberately managing it.

Studies in biology and psychology, for example, indicate that some scholars have tended to focus on differences distinguishing the two sexes, others on similarities linking them, and others on variations within and between both sexes (Chafetz, 1978). Others focus on what seems to be genetically determined and hence appears to exert a fairly stable influence; others focus on what is environmentally induced and hence variable according to external conditions (Block, 1976). Yet others have focused attention on the reciprocal influence of biological functioning and environment, seeing behavior and roles as the variable and highly unpredictable outcome of the interplay of both. (See, for example, Maccoby & Jacklin, 1974, Chapters 6 and 7.)

Thus the subject of sex differences prompts questions such as the following: Are there important differences? Are they, should they, will they be, more important than similarities in determining behavior to justify their serving as the basis of sex-differentiated role allocation? To what extent are differences mutable or immutable, controllable or uncontrollable, and what causes them to be so? Since we must assume there will be those who will attempt to manipulate them, particularly in the school setting, among those differences that are malleable, according to whose definitions of needs and desires will they be manipulated? How can/will school administrative and pedagogical processes integrate and manage these preferences into school decision-making implementations and evaluation?

This question is particularly significant in the context of the schools and of the societal debate about sex-biased patterns of role allocation. Some groups are already seeking to use the schools to influence the socialization of the two sexes so that past patterns of sex-differentiated role allocations, inside and outside the school, are weakened and eliminated (Fishel & Pottker, 1977). Yet these groups are not necessarily in agreement about which sex, belonging to which social class or to which racial or ethnic group, is most in need of exceptional institutional support to attain this objective, nor how the roles to which they are to be allocated must be redesigned to eliminate previous bias.

For example, national and international studies show that female students of equal aptitude as male students, when both are of middle- or upper-class socioeconomic status, tend not to utilize school resources and opportunities to the same extent as their male peers (Poignant, 1973; Purves & Levine, 1975). Subsequently, inequities in educational achievement as well as other factors, combine to constrict access to adult roles in economic spheres. On the other hand, it has been pointed out that many males, particularly lower socioeconomic status blacks in this country, fail to develop their scholastic aptitudes as well as their black (not to mention white) female peers, underutilizing their educational opportunities in comparison, and also constricting their access to adult roles (Boocock, 1972).

Further divergence is apparent with respect to the qualities and sex roles that different groups think schools should encourage males and females to develop. Some think the schools should work to encourage girls to take on instrumental[1] role attributes more closely resembling those thought to be characteristic of boys, whereas others think boys should be encouraged to become more expressive as many girls are thought to be. (See Kaplan & Bean, 1976, Part I.) Others think that both sexes should be encouraged to develop as freely as possible both of these sex-typed qualities, choosing those most compatible with their individual needs and desires (Greenberg, 1978). Concretely, these diverging ideas have been expressed in such queries as, "Should girls take more shop, should boys take home economics, or should both, could both, be more individually self-determining, developing those qualities and abilities that most fit their needs and desires, irrespective of the sex label attached to any particular attribute or activity?"

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[1] Males in advanced technological societies have acquired the stereotype of tending to be independent, competitive, individualistic, dominant, forceful, etc. Females tend to be characterized as dependent, passive, sensitive to the needs of other, yielding, gentle, etc. Such qualities in males have been referred to as instrumental, whereas female qualities have been referred to as expressive.

These diverging perspectives on what the school should, not to mention could, do to reduce alleged sex bias are obviously part of the societal debate about the roles of the two sexes in the different spheres of their lives, and as they relate to each other. These roles involve fundamental questions of self-interest whether they are questions of gender identity (i.e., the acquired feeling an individual has about himself/herself or others as a biological male or female), marital roles, or the economic, political, and social roles enacted by males and females. The education of the nation's children cannot be expected to be free of these issues and controversies regarding sex differences and similarities, and the inevitability as well as desirability of these differences, not to mention the questions they raise with respect to social engineering through the schools. Furthermore, contention about these issues is exaggerated by the fact that these questions are being raised during a period of economic decline, and growing job insecurity at a time of increasing saturation of the labor market at all levels when men and women compete against each other for scarce jobs opportunities. Within the context of the schools, disaccord regarding sex differences is not merely an academic quetion, but one of survival and access to the educational opportunities through which survival skills and knowledge can be acquired. Consequently, the educational relevance of sex differentiations involves not merely academic or pedagogical questions per se, but fundamental questions of self-interest and survival, pitting individuals of the same as well as different sex against each other. Issues concerning sex differences can raise important theoretical and practical questions in almost every sphere of human activity, and they are particularly salient to the educational enterprise. Beliefs about sex differences as they are reflected in institutional policies, structures, and processes, do seem to have important consequences for the nurturance of human developmental processes and the management of learning transactions that are fair for both sexes. Concern and anxiety about what differences and similarities may exist, or can be created or eliminated through learning experiences, are emerging as major preoccupations. At the moment, in the absence of needed information on which to base desired policies and programs, debate about sex differences and similarities is pressing the school community to address issues of this nature and to formulate policies for dealing with them. It is to the practical problems of policy-making and program development affecting the socialization of the sexes in school that this chapter is addressed.

Its aim is to bring together and conceptually synthesize information from reviews of the literature (for example, Safilios-Rothschild, 1978) concerning those aspects of sex differentiation that have pedagogical implications. It will explore genetic/biologic as well as cultural facets of sex differentiation that appear to influence the optimal utilization of educational resources and opportunities by both sexes.

Five sections follow. The first, "Sex Differentiation in Early Childhood," examines aspects of sex differentiation that appear in early childhood, and from genetic/biologic as well as cultural determinants. The second section, "Sex Differentiation and Schooling," conceptualizes manifestations of sex differentiation that are apparent in the school setting. The third section, "Schooling and Sexual Stratification," examines the role of the school in contributing to sex differentiation, particularly as part of larger societal stratification processes. The fourth section, "The Learning/Teaching Transaction and Sex Differences," describes strategies for devising and managing sex-fair classroom practices. The last section, "The Politics of Pedagogical Design: The Case of Sex Differences and Educational Equity," analyzes the political context within which pedagogical issues pertaining to educational equity in general and sex equity in particular are currently being debated. Current concerns about individual differences, as they relate to questions of reducing bias toward groups victimized by bias and unfounded stereotypes, will be discussed in the context of the pedagogical and political implications of principles of educational equity.

Sex Differentiation in Early Childhood

Biologically- and culturally-induced differences, many of which appear to have pedagogical implications, have been attributed to the two sexes from early childhood on. These include psychosexual differentiation, physical development, and motor activity, as well as cognitive development.

This section explores the literature describing these differences and attempts to attribute them respectively to biological or cultural influences, or to combinations of both. It also explores the extent to which differences do characterize members of each sex and differentiate the two sexes, and the extent to which some seemingly sex-linked characteristics may be shared by both sexes. It describes generally the implications these differences and similarities may have for equitable treatment of both sexes in educational settings.

Psychosexual Development

The nature and origin of behavioral differences, particularly those associated with reproductive functions, are currently the subject of controversy because of the implications they have for male and female roles in procreation, and for sex-biased divisions of labor in childrearing and providing the material requisites for family survival and well-being. Those who view these differences as biologically-determined tend to view sex-based divisions of labor as biological necessities, and even absolutes, insofar as they attribute them to heredity factors, with their deceptively simple genetic component of differing chromosomes (Chafetz, 1978, Chapter 1). Genes and biology, as well as sex-differentiated psychosexual behavior, are viewed as highly invariable determinants of traditional "dimorphic" male and female sex roles in the home and marketplace. Other participants in the debate emphasize the cultural components of traditional sex roles in family structures (Mead, 1949/1970). They assert that biological differences in procreation, nurturance, and protective capability, which served to differentiate male and female roles into sex-typed activities, have lost their raison d'etre in the industrial era. Women are no longer as vulnerable nor require as much physical protection during pregnancy, lactation, and nurturing of dependent children as they did in primitive times; nor are they continuously pregnant and caring for helpless vulnerable children. Furthermore, physical strength for most males and females in industrialized societies is not required for self-protection or material sustenance and survival, either inside the home or at the job. Consequently, they argue that female roles need not be constricted into predominantly procreative or nurturant roles, and their spheres of activity can extend farther out into the community and the marketplace.

Similarly, advanced technological societies reduce pressure for male roles to conform to "biological necessity" requiring them to physically protect vulnerable female partners and children, and act as their principal material resource. Male sex roles can be broadened beyond instrumental qualities and skills to include nurturant, expressive qualities (Lee & Stewart, 1976).

Thus some partisans in the debate accentuate biological determinisms of sex role differentiation and seem to favor its perpetuation, whereas others discount the need for these determinisms in differentiating the roles of the sexes (Collins, 1972; Boals, 1974). Again, the debate is crucial to education because of its underlying implications for sex-role socialization and the development of distinct sex roles based on separate, even if complementary, roles in procreation and nurturance. If distinctive roles beyond birth are no longer biologic necessities, then decades of attention devoted to socializing males and females to acquire distinct, biologically-primed qualities and skills in this area may no longer be primordial, indispensable duties of societal institutions such as family, school, and polity.

Diverging viewpoints on this issue arouse strong feelings on all sides because the nature of male and female roles in the home and marketplace are involved, and because some people feel that males and females are fundamentally "biologically" different not only in their reproductive roles but in their very "essence," and that something precious in these fundamental differences may be lost if sex role identities are diffused, mingled, mixed-up (Goldberg, 1973; Gilder, 1973). The sexes are considered to be dimorphic, "opposite," and their roles are not to be muddled together, assimilated, or confused by seeming cultural imperatives that deny biological necessity.

Yet biological aspects of sex differentiation sow seeds of controversy when they are erected into iron-clad arguments of biological necessity, and into sex-dichotomous characterizations of male and female psychosexual development. The nature of biological functions and variations in these functions manifested by both males and females weaken attempts to polarize them into male-female dichotomies (Money & Ehrhardt, 1972). For example, genes may be unambiguously sex dichotomous, but embryos of both sexes start out with the same undifferentiated anatomic genital structures. If a male Y chromosome is present, it will cause the embryo to develop testes out of its undifferentiated gonads. The testes will secrete hormones that block the development of the female sex organs that would develop if the male hormones were not present. At the same time, these hormones cause male fetal tissues to develop into internal and external male sex organs. Consequently, it can be seen an embryo possesses the potential of developing into either sex, and which sex it develops into depends first on whether a male or female chromosome is present, and second, on the production of varying amounts of hormones. Males and females have several hormones in common, namely, estrogen, pregesterone, and testosterone, although in significantly different proportions. It is interesting that important aspects of male development depend on the production of hormones that inhibit what would otherwise be female developmental processes.

Not only do male and female embryos have the same anatomic genital structures and share common hormones, but variations in the ways in which their organisms can evolve suggest that genetic males and females may be less distinct that previously thought. Variations can be introduced via opposing genetic and hormonal functions, one male and the other female, as in the extreme example of the hermaphrodite, leading to combined male and female primary and secondary sex characteristics. Another less rare variation involving opposing and genetic hormonal functions is the case of genetic males who develop looking like females because as fetuses their bodies were insensitive to masculinizing hormones. They are nearly always raised as girls, marry, and function as sexually normal females. Similarly, genetic females can be fetally "androgenized"--i.e., receive in utero abnormal amounts of masculinizing hormones, produced by their own bodies or introduced through the mother. These girls may develop external male genital organs, be labelled boys at birth, and grow up as boys. Or, in the less extreme cases, although the data is not conclusive, they may show less complete masculinization and only exhibit tomboyish behavior. Women so raised, according to Money and Ehrhardt (1972), are more likely than others to express bisexual or Lesbian feelings. Similarly, male fetuses who receive little masculinizing hormone might be more likely to exhibit homosexual behavior.

Such variations in hormonally-linked physiological development suggest that females, as a result of biological factors, may naturally exhibit stereotypical "male" developmental patterns affecting behavior, and males, for the same reason, may exhibit stereotypical "female" developmental patterns.

However, it is not clear whether these intrasex variations, which can also be viewed as intersex commonalities, are due to biological factors alone or to such factors combined with cultural and environmental influences. Girls who are "masculinized" at birth and exhibit bisexual or Lesbian feelings and behavior may do so because of their reaction to abnormal external genital differentiation. Endocrinologist Jennifer Bell wrote: "It is still not established whether the emotional problems of these girls are 'genetic/biologic' due to an effect of male hormone in brain function and differentiation, or 'socio-cultural'" (Note 2). Similarly, boys "feminized" at birth might also react to external pathology as a function of their own unique gender identity and socializing milieu, independently of the biological factors that caused the pathology.

Acknowledging these uncertainties in attributing such deviances to genetic/biologic or cultural factors, one must nevertheless recognize in these reports that psychosexual differentiation is not necessarily sex dichotomous since individuals of different genetic sex may undergo similar psychosexual differentiation. Members of one sex can undergo developmental processes and develop characteristics and traits traditionally thought to belong to the other sex. Consequently, the deceptively simple description of invariable sex differences to genetic/biologic factors must be rejected since these factors do not always "differentiate" the sexes but can link them through shared developmental patterns and characteristics. Nature and natural processes, then, furnish variations to physiology and behavior that create cross-sex similarities in sex differentiation.

Genetic and biologic functions that create cross-sex differences and similarities in developmental patterns, whether they are sex-convergent or sex divergent, interact with psychosocial phenomena to create even more complex causal patterns. An individual's psychosexual development emerges from psychosocial as well as genetic/biologic factors. If the latter prime certain aspects of an individual's behavior, as we have seen, they do so in conjunction with the former, by whom they may also be overshadowed. For example, both types of factors influence development of what has been labeled gender identity (Money & Ehrhardt, 1972), comprising personality predispositions and expectations as to appropriate and preferred behavior in interacting with others of same or different sex. Gender identity mediates between genetic/biologic and social phenomena to influence individuals' behavior, thus linking biology, culture, and social process. Here again it can be seen that the sex dichotomous distinction implied by an individual's gender or sex label as traditionally conceived is not as clear-cut as once thought, nor as invariable through an individual's lifetime. The sex label assigned to an individual at birth, which was once thought to be irreversible, is subject to the vagaries of biological function. An individual's core gender identity is similarly subject not only to the influence of biological function but also sociocultural pressures. Individuals with congruent genetic, hormonal, and anatomic sex characteristics have developed a contrary core gender identity and undergone sex-change surgical operations and medical treatments (Money & Ehrhardt, 1972). Genetic/biological males, accidentally castrated, have been raised as mentally-healthy, normally-appearing girls. The genetic female with mostly masculine characteristics but with female breasts undergoes breast removal surgery. It seems clear that mixed genetic and hormonal morphology, as well as variations in acquired personality traits, preferences, and behavior within each sex and between the two sexes, defy attempts to assign to each sex invariable differences. Certainly genetic/biologic and culturally-induced differences exist, which, as we shall see, can be important to developmental processes affecting learning and to the utilization of educational resources and opportunity. But they are not unambiguously sex differentiated, and the influences of sociocultural factors suggest that they may be significantly more malleable and variable within and between the two sexes than previously thought.

Variability and malleability in core gender identity has interesting pedagogical implications (which will be explored below) insofar as gender orientation defining appropriate roles for members of like or different sex has been found to affect not only sex-role development, but academic motivation, achievement, and pupil roles. If core gender identity is not absolutely and definitively sex dichotomous in the traditional sense, by virtue of genetic/biologic or psychosocial necessity, the ideal role of socializing agents, such as the school, may be less one of arranging the assimilation of stereotypical sex roles, but more one of facilitating individualized sex role develoment without a blueprint of the outcome.

Physical Development and Motor Activity

Aside from external anatomical genital differentiation, the most striking visible difference between many males and females is physical size and strength. As mentioned above, sex role differentiation among parents emerged in primitive times out of the biological division of labor between the sexes for procreation and the contingent necessity of providing nurturance as well as physical protection and material sustenance for the family. Subsequently, this intrafamily sexual division of labor was reinforced and extended into other spheres by cultural processes, resulting in increasingly distinct sex roles. Biological factors primed both males and females for such roles, and cultural factors assured their adoption. Males, unfettered by pregnancy and vulnerable children, and by virtue of their protective responsibilities and freedom of movement, developed their anatomical possibilities to the fullest. Although female physical development was also fostered by searching for food and assuring physical protection, females tended to concentrate on nurturance activities and to depend on males for physical protection and support. Continuous technological and social change combined with intrafamilial sexual divisions of labor have increasingly reduced the salience of female physical strength, prowess, and independence, even though females mature physically earlier than males. (In any terms of bone age, for example, by sex years of age, girls on the average are one year in advance of boys.)

The social significance of such differentiation, according to such sociologists as Millet (1970), lies in the fact that it contributed to the establishment of dominance structures between males and females (Millet, 1970). Insofar as female survival and well-being depended on males' physical prowess and ability to control the environment, as well as extract from it physical necessities, the status of females can be interpreted as a subordinate one. Biologically and culturally determined physical dependence led to subordinate status in other spheres where males had greater power to control resources and things of value.

Of significance for modern sex-role development is the fact that long after physical prowess has receded in importance, at least in advanced industrialized societies, the sexual division of labor to which it contributed--both at home and in the marketplace--retains its cultural legitimacy, and the dominance/subordinance relationship between males and females, it is argued, continues to be supported by societal agents of sex role socialization, such as the school.

Cultural stereotypes continue to accentuate and glorify physical prowess on the part of males, and derivatively, confer on males dominant status vis-á-vis females in physical as well as other social relationships. This is surprising in view of the loss of salience of physical strength and agility for family and economic life, as well as the observable variability and malleability of these traits on the part of males and females. Males vary greatly in their size, strength, and level and type of motor activity. So do females. In fact, many males are not bigger, stronger, and more agile than all females, and not all females are smaller, weaker, and less agile than all males. Male and female intrasex variations, once again, are at variance with stereotypes and create commonalities among some males and females that render them more similar to each other than to their respective sex groups. Pedagogically, these differences and similarities, which will be discussed later, render learning/teaching transactions significantly more complex from an institutional as well as a classroom perspective, requiring more individualized attention to sex-role development for males and for females.

Again, indications are that genetic/biologic as well as psychosocial factors have combined to produce important differences, but these differences are less sex-linked, less constant, and less immutable than previously thought. Yet popular images linger on as cultural stereotypes. Males are considered by males and females to be bigger, stronger, and more active than females even though a significant proportion of them are not. Evidence suggests that the developmental possibilities of both sexes are influenced by these expectations, and though no significant stable, reliable differences have been found in physical and motor characteristics between males and females in infancy, at the time social play begins around 2 1/2 years of age, the former increasingly develop their capabilities irreversibly to exceed those of the latter. Even if males are biologically primed for superior physical development in adolescence, such development depends for fruition on culturally-acquired motivations, expectations, behavior, and opportunities (Tanner, 1968). Similarly, females even if they are not biologically primed, theoretically are not biologically so restricted that significantly greater physical development than they achieve on the average is impossible. And yet psychological, cultural supports that would facilitate such developments have not been available or utilized. For example, evidence suggests that with chronological age there is significant sex differentiation in physical aggressiveness. Females, however, do not appear to have fewer aggressive feelings or to be less knowledgeable about ways to express aggressiveness, but rather to be inhibited from expressing it by "negative socializing experience" (Maccoby & Jacklin, 1974, p. 234).

The influence of social-cultural factors is evidenced by findings that suggest that aggressiveness may be related to levels of sex hormones (Maccoby & Jacklin, 1974), and that these levels are quite variable among males and females (Bell, Note 2). Consequently, one might expect greater variation within each sex as a result of genetic-biologic variation than these sex differentiated patterns and popular images portray.

Evidence suggests that one of these influences may derive from expectations of school authorities. One study indicates that teachers tend to believe that boys and girls differ innately along this dimension (Safilios-Rothschild, 1978, p. 41). Indications are that the culture of the schools may foster sex differentiation in this area, particularly in physical education, where males are attributed greater resources in time, opportunity, money, and status for excelling in athletics. It has not been empirically demonstrated, as a result of methodological limitations of existing data, that males actually do have a greater proclivity for competitiveness and dominance. It can be conjectured, however, that early sex-role socialization conducive to acting out aggression and establishing dominance relationships contribute to the tendency of males to develop instrumental adult-role attributes. The school, insofar as it accommodates or facilitates learning experiences leading to sex-role development of this nature, could be considered an agent of sex differentiation channeling male and female development into these stereotypical models. Some people might consider this desirable, and genetic/biologic factors, as well as psycho-social factors predispose it, but there is little evidence to support the propositions that it is necessary or inevitable, and considerable evidence to suggest it is arbitrary and limiting of human development possibilities.

Cognitive Development

Much attention has been focused on the possible existence of biologically-determined sex-linked differences in cognitive development, namely verbal and visual-spatial ability (Maccoby & Jacklin, 1974; Sherman, 1978). Such differences are highly relevant pedagogically because of the tendency for males and females to develop distinct specializations and to follow curricular tracks centered around subjects related to mathematics and science versus languge arts and literature (Matthews & McCune, Note 1). This specialization tracking is of consequence for further educational and occupational achievement and opportunity, so that it may be construed as a factor limiting the developmental potential of both sexes. Should genetic/biological determinisms underlie such sex differentiation, it would be less difficult to prove these limitations arbitrary and malleable.

A recent synthesis of the literature (Sherman, 1978) concludes that verbal skill may be sex-preferred for more females than males. I suggest that this sex preference is likely to be asociated with accelerated maturation of females, as compared with boys, with its resultant verbal precosity stemming from left-hemisphere versus right hemisphere preference. However, Sherman characterizes these sex-related differences in cognition as "trivial and fragile." The development by many females of left-hemisphere preference, if it is a result of early maturation, may predispose them to reinforce this preference, but it does not mean the right hemisphere does not or cannot develop. As for males, if later development predisposes many of them to right-hemisphere preference, thus facilitating the development of visual-spatial skills, the underlying biological and social causes do not per se automatically preclude development of the hemisphere not preferred. Biology in this instance, even if it does prime sex-differentiated cognitive development in early childhood, does not make its perpetuation or accentuation inevitable--unless, of course, it is compounded by sociocultural influences reinforcing it. The cognitive functions biologically-elicited must be socially-learned and reinforced in order to be behaviorally expressed. Theoretically, such influences can introduce a wide range of variations, and this seems to be the case with respect to verbal and visual-spatial abilities. Verbal skill may be sex-preferred for more females than males, but that also means that many females and males may resemble each other more by sharing superior verbal abilities or visual spatial abilities than many members of their own sex do.

Whether or not they come to recognize these shared traits, feel comfortable with them, and make deliberate decisions as to how they want them to develop will depend very much on their schooling. Depending on whether pedagogical practice "teaches to sex," in terms of stereotypes of their special inclinations or disinclinations, or "teaches to strength" or "teaches to weakness," sex differentiation will be heightened or weakened, and individual autodetermination affirmed or denied. Neither biological nor psychosocial necessity can be invoked as a blue print of desirable or feasible outcomes.

Implications

This section has so far described genetic/biologic and culturally induced aspects of sex differentiation, apparent from early childhood in psychosexual, physical, and motor, as well as cognitive development. It has been suggested that even where genetic/biologic factors contribute to sex-linked differences, they are not constant among all members of that sex but rather variable. Furthermore, traits that are sex-linked are not thereby sex-exclusive, for they can be found among members of the other sex as well, even if among a smaller proportion of its members. In addition, trait differences from individual to individual tend to be rather small. Consequently, differences that exist at early childhood appear too small to lend themselves to significantly differentiated patterns of development in the areas described, either within each sex or between the sexes, unless reinforced and accentuated by sociocultural processes. Pedagogically, these differences appear too significant per se to limit developmental possibilities, unless reinforced and accentuated by external influences.

And yet, small differences emerging in early childhood become part of an obvious pattern of increasing sex differentiation of behavior and achievement within the school, even though these trait differences have not been shown to have any educationally significant or limiting effect. There is nothing to indicate that psychosexual, physical-motor, or cognitive differences, whether they are genetic/biologic or cultural in origin, should significantly affect ability to learn. The differences are not so large as to greatly handicap or favor school performance for the majority of school children. Even were it possible, from a scientific point of view, to establish conclusively that some traits are invariably more characteristic of one sex than the other as a result of genetic/biologic reasons, it may be questioned whether such a finding should be of great import for schooling. Educational practice would not be much furthered, since there would still remain the thorny problems of deciding whether and how the school should and could reinforce, merely accommodate, or attempt to mollify the differences manifest among students. Principles of educational equity would allow that optimizing every individual's potential for development, according to his/her needs and desires, make sex-linked traits relevant merely to the diagnosis of instructional needs, rather than indicative of the end states to be attained.

In contrast to this perspective, a more traditional view would hold that, above all, the school should encourage the realization of the greatest natural potential, and that superior performance should elicit greater educational resources and opportunity than less impressive accomplishment. This viewpoint, however, competes with an approach based upon principles of equity, insofar as it would accord priority in the allocation of opportunity to those most likely to succeed in developing a certain trait in contrast to those most in need of developing that trait. Which of these alternatives is chosen will depend on the value preferences of the decision makers and on the extent to which information about sex differences is used as pedagogical information to guide the design of effective instructional treatments, rather than as justification for withholding educational resources, or sex-biasing their allocation.

Consequently, even in the unlikely event that highly invariable sex differences should be ultimately identified, it is not clear that the results would or should provide any kind of blueprint showing the schools how to maximize allocation of their resources in a trade-off between the sexes. It would seem more fruitful for pedagogical and institutional management to identify differences that have been found to exist, as well as all the resources that may be brought to bear to optimize the potential of children of both sexes to develop those traits and capabilities that their individual needs and desires require, regardless of the extent to which they may or may not manifest certain traits.

In this light, the pedagogical relevance of genetic-biologic factors associated with sex differentiation is thought to lie in identifying what intra- and intersex differences there are, and how they manifest themselves in the school setting, what manipulable factors affect them, and what role the school has played and can play in responding to them in such a way that they do not act as self-fulfilling prophecies that channel and limit the developmental potential of either sex. The implications of such an equity approach will be discussed in sections that follow. In anticipation of that discussion, the following sections synthesize literature that contributes to conceptualizing how sex differentiation in the areas of development already discussed is manifest in the school setting via student roles, peer interactions, and student-institution interactions. How student-introduced sex differentiation interacts with school factors such as teacher expectaton, administrative structure, institutional policies and programs to affect student development is discussed in the following section.

Sex Differentiation and Schooling

The biologically and culturally-induced differences described above that characterize both sexes from early childhood continue to evolve in the school setting in function not only of genetic-biologic factors but of cultural influences surveyed by primary and secondary groups such as family and peers. Sex-differentiated development and learning increase with chronological age under the combined effect of influences external and internal to the school. Intraschool transactions thus reflect external influences, whose impact is felt prior to and during formal schooling, as well as influences proper to the school (and the institutions that influence the school) that interact and reinforce externally-induced differentiations.

Although what follows is not intended to be a methodological analysis, it should be noted that it has been obtained from school children representative of only a few of the many social groups to which distinct school populations belong, that is, primarily white, middle-class students. Consequently, it offers little guidance as to the variations in sex-role differentiation that may characterize school children from differing social classes, or different ethnic or cultural backgrounds. Preliminary evidence (Lee, Note 3; Reid, Note 4), indicating different cultural values and behavior characterizing some lower- and middle-class ethnic minority group females and males as compared with "majority" group females and males, suggests that similar variations may be found in the behavior of the two sexes of these groups in educational milieus. Existing evidence is, therefore, not only incomplete but misleading, for it fails to capture all the possible intrasex and intersex variations, some of which will be described below, that may differ according to social class, and ethnic/racial and cultural group membership.

Student Sex Role

Sex differences evident in early childhood in core gender identity, and in physical and cognitive development appear to be consonant with increasing sex differentiation of student roles. As described above, distinct male/female procreation roles can be interpreted as having lent themselves to the acquisition of distinct values, aspirations, and interactive styles on the part of both sexes, including relationships characterized, at least in part, as male-dominant and female-subordinate in parental as well as social, economic, and political roles.

Conceptually, need-dispositions arising out of sex-differentiated core gender identities, based on sexual divisions of labor and reinforced by sex-differentiated physical and cognitive development, contribute to sex differentiated student roles. In these, the role attributes of both sexes are increasingly sex-stereotyped and sex-restricted, and the options, educational and otherwise, of each sex role are constricted by the increasing exclusiveness of each others' roles.

In terms of personal qualities, one interpretation that can be advanced on the basis of the work of Parsons and Bales (1955); Millett, (1970); and Block (1973) is that male/female power differentials in procreative roles are reflected in diverging characteristics, classically dichotomized as instrumental versus expressive, which begin to develop early in life based on socialization experiences reflecting sexual divisions of labor within the family. Research has found that as much as one-third of a given (adult) population of males and females are significantly sex-typed (according to their own classification along these dimensions). (See Bem, 1976.) Furthermore, it has been found that parents act similarly to foster instrumental qualities in boys and expressive qualities in girls (Block, 1973). In particular, fathers were found to be more crucial agents in fostering this sex typing than mothers. This fact raises the issue of whether males may not have a greater stake in maintaining sex-differentiation that favors the ascendancy of their own sex.

In terms of actual behavior, children sex differentiate the content of their own and others roles beginning at age two, learning not only the psychological characteristics but appropriate behavior patterns required of the two sexes (Fagot & Patterson, 1969; Emmerick, 1973; Maccoby & Jacklin, 1974). Soon thereafter both boys and girls come to value the two sexes differently, and to develop distinct sex roles with power differentials in their relationships, manifest in the school setting in peer interaction and, evidence suggests, increasing measured aptitude and achievement differences.

It is difficult at this point to conceptualize how core gender identity, personality need-dispositions (such as instrumental or expressive orientations) sex roles, and pupil roles may interact, but there are indications as to how they are linked. In terms of core gender identity, boys and girls tend to differentiate content and form of expected qualities and behaviors, to evaluate the two sexes differently (both sexes developing a more positive opinion of boys and an increasingly negative image of girls, including favoring being male over being female), to attribute more power to male than to female roles, and to develop different aspirations and achievement patterns (Looft, 1971; Papalia & Tannent, 1975).

In terms of physical development and motor activity, the emergence of stronger tendencies among males than females to engage in physical aggression is curious. Evidence that females have sex-linked higher survival rates at birth, for genetic reasons, tend to be physically more robust during early months, do not exhibit different activity levels through two years of age, and develop faster than boys physically in early childhood (Maccoby & Jacklin, 1974) is provocative. Yet sex differences clearly emerge in aggression at the time of social play and during early primary school years (Maccoby & Jacklin, 1974). These differences are significant insofar as it may be hypothesized that they contribute to the establishment of male-female dominance/subordinance structures, based on physical strength and willingness to use it. Little attention has been given to the possibility that physically-based dominance structures in early grade school may result in sex-role differentiations that produce intersex inequalities in power distribution, in the ability to influence and control others, and in the utilization of learning resources and opportunities.

Yet physically-based dominance structures among primates would suggest that their existence be explored as a source of accentuated sex-role differentiation in the classroom (despite the contrary impression provided by contemporary norms that portray strength as having been superseded by other criteria such as knowledge, inter-personal skills, etc.) (Tanner, 1961).

Taken by itself, aggressiveness among young males is a cause for concern because of its sex linkage, which biological factors alone do not appear to justify. Two issues are being raised here. One is that the intrasex and intersex variability of physical size, strength, and activity fails to maintain itself, and one sex takes far greater advantage of its developmental potential than the other. The second is that sex-differentiated physical dominance structures may underlie other dominance structures established on the basis of other criteria. As will be discussed below, the role of the school would be to manage student interactions so that (a) potential and actual variations in physical development are unfettered by cultural stereotypes and can evolve, according to individual needs and preferences; and (b) physical differences do not allow individuals of either sex to limit by social means the developmental potential of any persons.

First, one must ask in what way could sex-typed physical dominance structures express but also reinforce sex role differentiation? As has been indicated, little evidence is available. Yet, on the basis of personal observations of children, I have noted the influence that latent, not to mention manifest, threats of physical aggression have on peer group relations in preschool as well as kindergarten and first and second grades. Peer subcultures often include children--particularly males--of superior physical prowess as integral, if not central, status figures. Playground social interactions, for example, are often organized around the stronger and consist of continuing competition to publicly determine and proclaim the strongest and most agile. Although other criteria weigh into the social equation of status determination, physical prowess is often central.

What is interesting is that it is most frequently males who come to the fore even though many females would have the physical potential to compete. Yet if one watches the playground, girls tend to withdraw from rough and tumble play and cluster together in one-to-one small group relationships. In the classroom, many boys continue to attract attention to their physical activities--and even if empirical evidence does not substantiate sex differences in activity--boys, girls, and teachers tend to perceive boys as being more active physically, and as a group more likely to prove disruptive.

Within the classroom, peer interactions reflect further sex differentiation. Members of both sexes tend to select same-sex friends, which would reflect a natural bonding process, but as a sex-segregative phenomenon the process may also function as part of drawing up sides and accentuating sex diferentiations. Same-sex peers and groupings have been observed to function within the classroom with inquisitional perseverance in enforcing traditional sex role norms on the part of the children of the same and different sex (Fagot & Patterson, 1969). Girls scold boys for their disruptive, disobedient activities, reflecting internalization of normative institutional sanctions, and boys tease girls for being goodie-goodies and teachers' pets. Both sexes surveil peers of the same sex for sex-deviant behavior. Evidence to be discussed in the next sections suggests that imposition of sex-role norms is heightened by traditional classroom structures and pedagogical practices, which pit boys and girls against each other and accentuate sex differences in behavior. In highly-structured settings, boys are more rambunctious physically, girls more restrained, obedient, and less likely to engage in activities traditionally reserved to the other sex. Yet these institutional pressures appear more to respond to, and reinforce preexisting sex differences than to create them.

Sex differentiations have been found to extend to objects and subject areas (Levy, 1972). Items such as blackboards and erasers have been given a gender label by males and females, who tend to concur in their sex classification. Academic subjects such as reading have also been perceived as feminine. Such classifications may be significant because they may not only reflect differentiation that males and females make but show the extent to which, and the variety of, the mechanisms by which the institutions foster differentiation. Members of each sex might be discouraged from engaging in behaviors and activities that are cross-sex labeled, limiting the diversity of qualities, skills, and knowledge acquired in school.

The most serious area in which such an occurrence is suggested by the data is in the area of cognitive development and academic achievement. Divergent sex and student roles are certainly of pedagogical concern insofar as individual qualities and self-determination are limited by socialization processes. Sex-based divergencies and limitations in cognitive development and achievement would be of equally serious import, especially in the absence of inelectable genetic-biologic determinism, and if associated with culturally-induced differentials in self-concept and aspiration.

There is evidence that sex-role differentiation in the school is linked to sex differences in cognitive development and academic performance--via sex differences in aspiration and motivation, and in conception of appropriate gender roles. Relative equity in early school years in measurements of aptitude and of academic achievement in major subject areas is superseded by significant sex differentials in subject-matter performance in later years. Members of each sex tend to develop specializations in different areas and to outperform the opposite sex in that area--although girls tend to improve throughout school (Boocock, 1972).

According to Kohlberg (1966, p. 338), aptitude test scores of young boys and girls tend not to show significant sex differences, even on tests of mathematical reasoning and spatial relations (Boocock, 1972, p. 82). Test scores also indicate that there is substantial overlap between the distribution of scores for the two sexes, superior or highly developed ability (and presumably this holds true for low ability as well) being about equally distributed among boys and girls, such as generally tends to be the case with most trait measures.

However, different test scores emerge for males and females with respect to aptitude and specific skill areas as they grow older. Males tend to do better than females on mathematical reasoning and perception of visual-spatial relationships. By middle elementary grades, females will tend to do better than males on tests of verbal fluency; yet they will lose their lead permanently later on.

After puberty, the overall academic performance of females, previously superior to that of males, drops off, never to recover. In major subject areas, whereas girls tend to out-achieve boys in reading tests of verbal fluency in the early years, boys tend to catch up even in this area. In mathematics and science achievement from elementary school on, boys take a significant lead and girls never catch up. It has been shown that more boys than girls tend to enroll in the college preparatory track of high school, that they tend to do better on college entrance examinations, win more merit scholarships, and go on to complete more years of college and postgraduate study (although in the mid-1970's, college enrollments shifted so that more than half were females.)

Of particular interest is the relationship between core gender identity, aspiration, and achievement. First, females as well as males express instrumental orientations and needs for achievement. However, it has been found that females whose core gender identity comprises the expectation that they will not be attractive to males if they compete with them to achieve (Safilios-Rothschild, Part 4, p. 11), tend to be less successful scholastically than females who reject this stereotype. Furthermore, studies show that if aptitude is held constant, males tend to have greater expectations of success than females, and correlatively, to be higher achievers. Females with lower expectations of success also tend to be less successful. Consequently, between aptitude, aspirations, and achievement, core gender identity prescriptions of appropriate male/female relationships may be an intervening variable, depressing achievement for females.

To complicate matters further, sex differences of this nature have been found to interact with cultural values of different ethnic groups (Boocock, 1972). Intersex differences in aspirations within the same ethnic group have been found, and members of one sex in that group had aspirations more similar to those members of other ethnic groups. In this case, while statistically, on the average, whites of both sexes were more likely than blacks of both sexes to aspire to attend college in the 9th grade (interethnic differences), controlling for sex showed that this difference existed only for black males, who had a lower aspiration than either white males and females or black females (Boocock, 1972, p. 91). However, in actual practice, when social class is added to ethnicity and sex, evidence suggests that low socioeconomic status male students in general, versus black males in particular, are more likely to attend college than low socioeconomic status females. If one were to focus on Hispanic males and females, who tend on the average to have even lower high school completion rates than blacks, one might find that they have even lower aspirations than other low SES males and females. This adds even greater variation to the differential patterns that have already emerged.

In summary, sex differences in core gender identity, physical development, and cognitive development that are apparent in early childhood are consonant with increasing sex differentiation of student roles. Sex differences in self-concept, aggressive behavior, and measured aptitudes and educational attainment emerge. Both genetic-biologic and cultural factors underlie this differentiation. However, little evidence has been found to suggest that the genetic/biologic induced differences are large enough or appear with enough stability within each sex to justify per se the degree of sex-differentiation of student roles observed in the school setting. This section has discussed ways in which these student-introduced phenomena are manifest in the school, particularly with respect to peer interactons. The next section explores the ways in which the school as an institution responds to these differences and has been seen to reinforce them as an agent of larger societal stratification processes.

Schooling and Sexual Stratification

Because of genetic/biologic as well as cultural factors, students enter school with sex-differentiated traits and predispositions. Chronological age amplifies these traits and predispositions. As indicated in the last section, there is little evidence to suggest that genetic/biologic influences alone are strong enough to create the sex-differentiated patterns of physical, social, or cognitive development that evolve in the school or of power-, status-, and achievement-differentials that emerge. It also appears that cultural factors, including primary and secondary socializing influences of the family (especially parents and siblings), peers, and social milieus weigh more heavily than genetic/biologic factors as sources of sex differentiation within the school.

This section describes the role of the school in dealing with the sex-differentiation attitudes that students bring with them. It suggests that students themselves elicit a sex-differentiated response pedagogically and institutionally, and that the school, as an agent of societal stratification processes, reinforces and accentuates patterns of differentiation at the classroom and institutional levels (Saario, Jacklin, & Tittle, 1973). These processes utilize sex as a significant criterion for the differential allocation of such resources as knowledge, skill, status, and opportunity.

Pedagogy and Sex Differentiation

Evidence indicates that many teachers, male and female, tend to behave similarly in treating students of each sex differently. This happens because children of each sex tend to behave differently to teachers and elicit different responses, and because teachers themselves have different expectations for each sex (Safilios-Rothschild, Part 2). For example, it has been found that many teachers tend to believe that boys are *innately* more active than girls, and that girls are innately more obedient than boys. Some teachers believe one sex is better suited to some subject matters than the other. Some teachers believe that girls will tend to do better in reading than boys, although some (though fewer in this country than abroad) believe that boys will do better in that area (Kincaide, Note 5). Teachers' expectations regarding achievement have been shown to be borne out: females will do better with teachers who expect them to, and males will do the same or better where teachers expect from them the same or better performance (Palardy, 1969). Student expectations can independently elicit a sex-typed response from the teacher, and teacher expectations can independently affect student expectations and behavior. This influence will be particularly strong if student and teacher sex-differentiated expectations are congruent.

Another example of sex-linked, student-teacher interaction patterns can be found in the allocation of such a resource as teacher time and attention (Fowlkes, Note 6; Lee & Gropper, 1974). In the early grades, for example, it has been found that boys and girls do not receive the same kind of teacher attention, and that boys are favored with the most attention, evaluationally positive and negative (Brophy & Good, 1974). Teachers tend to be more aware of boys in general, both with respect to whether boys are satisfied or dissatisfied, or whether they conform or do not conform to rules. Girls tend to receive less attention for any kind of behavior, and their teachers seem to be less aware of their satisfactions and dissatisfactions. Boys with reading problems are much more likely to be referred for remedial help than girls who also have reading problems (Kincaide, Note 5). One may argue that the label of reading difficulties is not an unmixed blessing, but it does tend to provide pupils to whom it is attached with more attention and certainly more resources in terms of teacher skills and teaching time. Lack of congruence between what has been referred to as boys' gender role and pupil role, in this case, procures them greater resources, even at the price of "negative strokes." However, congruence between girls' gender role and pupil role, in terms of norms of passivity and unobtrusiveness, deters them from receiving an equitable share of resources of skill, time, commitment and concern, and money.

Teachers' sex-differentiated expectations regarding activity levels, subject-matter competence as well as preoccupation with classroom behavior seem to involve a finely graded status hierarchy, encompassing not only sex but social class, race, and ethnicity. A number of studies disclose a stable pattern of inequality in teacher expectation, attention, reinforcement, that grosso modo can be summarized as bestowing the lion's share of favor to, in descending order (1) white, middle-class, high-achieving boys, (2) white, middle-class, high-achieving girls, (3) lower middle-class, "minority," low-achieving girls, and (4) lower middle-class, minority group low-achieving males (Safilios-Rothschild, Part 4, 1978). It can be argued that these patterns merely show that teachers respond to already existing sex differences in student expectations and performance potential. It would be legitimate to ask, in the context of educational equity and principles of sex-neutral pedagogy, whether a sex-differentiated response is fair, inescapable, or defensible. If students are conscious or unconscious subjects and objects of sex-differentiated socialization processes, can teachers consciously or unconsciously do likewise if they are to promote principles of educational equity and sex neutrality in the allocation of resources?

The Administrative Structure and Sex Differentiations

Since there is evidence to suggest that both male and female teachers are alike in treating male and female students differently (Safilios-Rothschild, 1978), one is drawn to examine the administrative structure as it may purvey to and through male and female teachers norms that sex-differentiates the treatment of male and female students. An institution that acts effectively to transmit through both sexes the same norms sex-differentiating treatment arouses curiosity because it reflects findings of the large amount of literature dealing with family sex-role socialization of young children (Block, 1973, Note 7; Emmerick, 1973). Both parents have been found to behave similarly in treating sons and daughters differently. Fathers have been found to have a greater tendency to reinforce more strongly than mothers sex-stereotyped roles for both sexes, particularly in fostering expressive-communal qualities of docility and dependency in daughters, and intrumental-agentic qualities of ingenuity and independence in boys.

It is well known that men dominate numerically the upper-level positions of authority structures in school systems, particularly the administrative roles of superintendent, principal, and supervisor, and that women are subordinate to them in lower echelon positions (Sexton, 1976). Analogously, male/female dominance/subordinance structures in school systems would present to students of both sexes a homogeneous set of role models much as in familial sexual divisions of labor. These structures convey sex-differentiated instrumental versus expressive norms, and imply that dominant statuses are reserved for males, and subordinate for females. Little research has been conducted to show how children perceive the sex/gender label of authority position and how they may be influenced by it. Even in political science, where considerable work in political socialization has been done, this is true. Yet one can understand that until recently it might not occur to researchers to ask whether children attached a male or female sex label to governmental authorities. Similarly, in education, little work has been done to ascertain how children perceive the sex label of school authorities and how male-dominated authority structures may influence their development. A number of hypotheses can be advanced. For example, comparisons of male versus female administrators have found that women administrators place greater emphasis than males on "expressive" objectives such as concern with individual differences among pupils, the social and emotional development of pupils, and deviant pupils (Gross & Trask, 1976). Furthermore, professional performance and pupils' learning were found to be higher on the average in the schools administered by women. There are studies that suggest that male-dominated authority structures may bring a different role orientation to schools than female-dominated authority structures (Tucker & Gideonse, 1977). It is not proposed here that either sex should dominate the schools or promote one or another type of influence, but this evidence raises the question of whether male-dominated school authority structures purvey a sex-neutral image of authority and foster diversified sex-role development. Clearly, not all males or all females bring to administrative positions homogeneous sex-typed orientations, skills, or abilities. Nor is it being suggested here that they should, contrary to current debate in which opposing schools of thought urge either that females should acquire stereotypical male qualities, or males stereotypical female qualities.

Thus, there is preliminary evidence that each sex may have among its members individuals who display sex-distinctive interactive styles. These patterns should be explored to establish how characteristic they are. If, for example, one sex exclusively dominates educational authority positions, it needs to be determined whether the diversity of sex-role models and the potential of these models to foster diversified sex-role development throughout the institutions is being limited. Limitations in institutional capability to foster diversified sex-role development might consequently be interpreted as prejudicial to equitable treatment of students of both sexes since each would be limited to imitating or replicating existing sex-typed models, despite the fact that their individual developmental needs and preferences may call for qualities and skills traditionally reserved to the other sex.

Male-dominated, sex homogeneous administrative authority structures may convey to students the expectation that males, rather than females, occupy dominant positions. Male students are thus pressured into adopting specific leadership objectives and styles, and female aspirations are thereby limited to subordinate positions and styles. These sex-typed role models would contribute to the anxieties that males have been found to possess as a result of societal pressures for achievement (Komarovsky, 1973) and at the same time would depress female achievement motivation.

That school authority structures may actually foster sex-typed role models is suggested by evidence mentioned above that school institutional norms may foster on the part of both male and female teachers similar sex-differentiated expectations and behaviors towards students, and that they seem to be consonant with emerging distinctive sex-role definitions of male and female students. Obviously, school administrative and teaching personnel do not so much create these biases as share them with socializing institutions, such as family and social milieus that have already generated the processes in the students. Yet student sex differences should not be attributed so largely to these primary socializing influences on personality development that they are regarded merely as psychological, interpersonal phenomena unrelated to broader macro-institutional forces (Lee & Gropper, 1974).

The Politics of Student Sex-Role Development

Student sex-role development, it is suggested, should be viewed in a larger context of institutionally designed and managed stratificational processes that allocate students to specific hierarchically-organized statuses congruent with the stratification systems of the schools and the larger society.

This view of sex-role development contrasts with a current, but more traditional, view that regards student sex differentiation as emanating primarily from different psychological need dispositions that characterize each sex at the onset of schooling (Lee & Kedar-Voivodas, 1977). Males are seen as naturally more active, enterprising, and contesting school authority, and females are seen as more docile, dependent, and obedient to school norms and authority structures. According to such interpretations, although the school accommodates these differences, each sex increases its distinctiveness within the educational arena primarily as a function of time.

That the school plays a more active instrumental role is suggested by evidence showing that its own structure may foster divergent sex-role development, even to the extent of contributing to sex-role conflict between boys and girls. For example, it has been found that not only do boys and girls develop differently in the school, but their different development is a cause of anxiety and strain in same-sex and different-sex peer interactions, contributing to increasingly exclusive sex roles (Safilios-Rothschild, 1978, Part 2).

For example, male gender role development is said to be incongruent with institutional expectations for the male pupil role. The problem is portrayed as involving the lack of congruence between male pupil role in the primary grades, which the authority structure would wish to be obedient, passive, and accepting the school norms, and the male student's gender role, which essentially involves striving for independence, individualism, mastery, and achievement. Primary school females, on the other hand, socialized outside the school to obedience and passivity, find greater congruence between gender role and pupil role. In the early school years, boys disturb the school's efforts to gain control. Girls, via previous socialization, respond positively to school control mechanisms, thereby helping to maintain them. These sex-divergent responses to institutional norms create tensions between male and female students of grade school age and reinforce sex-role distinctiveness. However, in later years, according to this argument, as schooling channels individualism into structured competition within the school and between schools, boys' gender role and pupil role become more congruent, with societal goals of economic and political socialization into aggressive, competitive individualism. At this stage, on the other hand, females succumb to sex-role definitions that place greater importance on submissive attitudes and noncompetitive behavior, at least with males. Consequently, females find that their adolescent pupil role conflicts with their gender role, and accordingly de-emphasize the achievement requirements of the former (Safilios-Rothschild, 1978, Part 4). Academic competitiveness is portrayed as incompatible with harmonious male/female relationships and the attraction of a spouse. Sex-role conflict at this stage tends to be resolved by female de-emphasis of instrumental orientations, depressing their aspirations, achievement, utilization of educational opportunity, and status, in comparison with those of males.

What is occurring here then would concern more than sex-divergent psychological orientations. Sex-role differences involving aspiration, performance and overall achievement, and school completion rates through college reflect not only differential socialization but also the consequences of stratification processes, since values, resources, and opportunities are allocated unequally among individuals on the basis of sex, (not to mention ethnic/racial and cultural group membership, and social-class factors that may also be involved). Members of these categories receive different messages from the school as to what is expected of them, and what is possible for them, which interact with their own expectations to affect their aspirations and performance. School norms eventually subdue male resistance to institutional domination by co-opting them to achievemnt norms. Similarly, females' instrumental orientations fail to be encouraged, are increasingly weakened, and reinforce subordinate aspects of their developing female roles. Sex differences in aspiration and achievement is a particularly salient case of educational stratification because unlike racial differences (where attempts have been made to attribute measured differences to genetic endowment, or to low socioeconomic status, cultural "deficits," or neurological impairments, and the like) there are few such differences between males and females. Females start out ahead in terms of physiological maturation and school achievement, only to fall conspicuously behind after sexual maturation when physiological changes combine with societal stratification pressures to differentiate and to channel males and females into stereotyped sexually-differentiated marital, as well as economic, political, and social divisions of labor.

Aside from role conflict, what is involved here is differentiated access by males and females to the values, resources, and opportunities that the society allocates to and through the schools. These include *attitudes and expectations*, and *financial and human resources*, such as those which accrue to students who remain in school the longest, have greatest access to teachers' skills, knowledge, and time, and follow curricular paths leading to greater options and higher status. They also include access to and control of *decisions*, and the processes by which the policies allocating financial and human resources are formulated (since these tend to be male-dominated), as well as control of the design and management of administrative systems through which they are implemented. Within the school, these resources also include equal access to *teacher treatments*, and the values, attitudes, and practices through which sex-stereotyped interactions may flow to further differentiate the sexes.

If, for the sake of argument, one agrees with the hypothesis that this kind of inequity in the share the two sexes receive of scarce resources in school corresponds to the kind of inequities characterizing stratification processes in general, to what extent might they be deliberate as opposed to accidental? Is sex-biased stratification within the school a mere coincidence of malintegration of roles, inflicting real but intended harm to one group, and yet favoring another, or is it part of a more global design in the societal division of labor?

To probe this issue, one might begin by examining the characterization of the school as "feminine" (Sexton, 1969), as well as the widely known demarcation of male and female personality tendencies as "instrumental" versus "expressive" (Bem, 1976). The "sex role conflict" school of thought has characterized male and female pupil role strain as the resistance of young male pupils to feminizing influences, allegedly arising from the predominance of females among elementary school teachers. It ascribes the stress caused females in the high school years to the malintegration of female gender role with pupil role, which in post-pubertal years requires individualism, self-confidence, risk-taking, and competitiveness, qualities that females, in contrast to males, are thought to have had less opportunity and encouragement to develop.

This line of argument is discussed in greater detail below, but it can be said at this point that attributing educational shortcomings to the influence of women is difficult to sustain in view of the fact that research fails to show that sex of teacher has any significant impact on educational outcomes. Male teachers have not been shown to have a different effect on male or female students than have female teachers (Safilios-Rothschild, 1978, Part 4). Furthermore, whereas working mothers' absence from the home has generally failed to be associated with unfavorable educational outcomes, fathers' absences have been associated with such outcomes (Lee, Note 3). It is, then, curious that boys' educational problems in the school are attributed by some to women as teachers in the schools rather than to fathers' absences from the home.

However, the argument is interesting in that it calls attention to what may be sex-based dominance-subordinance phenomena. Curiously, it has been asserted that while students of both sexes may experience role strain because of divergent gender-role expectations and institutional expectations, little attention has been paid to another type of student role strain--that between males and females. Evidence suggests that institutional structures foster strain and anxiety between the two sexes and heighten divergent sex-role expectations and development. A small but significant collection of studies shows that traditional structures visibly accentuate distinctive sex roles and activities (Fowlkes, Note 6). Classroom management practices, some of which have already been mentioned, sex-type activities, the allocation of space, and interaction patterns are pertinent examples. These foster distinct roles for each sex, and reinforce them in all students by making the differences visible. Students then begin to internalize these expectations and, either alone or with teacher support, police each other to ensure conformity to sex-differentiating norms (Fagot & Patterson, 1969). Males and females choose up sex-homogeneous sides and carry on a latent, if not occasionally manifest, "war" between the sexes in the classroom to procure for each side the lion's share of social, political, and economic resources available at classroom level. The "war" provides the opportunity for perfecting sex-role distinctiveness, and procuring recognition and status in those areas legitimately open to students of each sex: teacher attention, rewards (affection, esteem, praise, grades on particular subjects, promotion), skills, knowledge, opportunity, and status in student subgroups. The conflict provides the opportunity for sex differentials to emerge in self-concept, aspiration, achievement, and access to, and utilization of, opportunities. The conflict has been viewed as sufficiently serious that proposals have been advanced for segregating the two sexes so that each will not "steamroller" the other, via traditional classroom management techniques, into sex-limiting and sex-limited spheres of activity and achievement (Safilios-Rothschild, 1978, Part 4). The role conflict between the two sexes is considered so severe that propositions have been made not to reduce the pressures for sex-exclusive role development by retaining both sexes in proximity in sex-fair managed classrooms, but to encourage sex-distinctive role development via isolation. Presumably, it is thought that individual development would be enhanced by exclusion and so avoid contamination by the other sex. Developmental models in which individuals in diversified environments emulate and acquire each other's qualities according to their own needs and preferences would be replaced by a segregative model. But might not such a practice contribute to sex-role differentiation? Might it not accentuate the role of the school as a sorting machine, dividing students according to a host of criteria, among which sex and cognitive performance would be foremost? Might it not suggest that the schools function as agents of stratification, differentially and inequitably allocating status among different groups and individuals? Segregated education, while it may improve achievement (Safilios-Rothschild, 1978), has not been shown to improve self-concept, broaden sex-role attributes and options, decrease sex-role conflicts, or increase female accomplishment in long-range terms, especially with respect to job-related performance. Nor does the performance of men appear to need isolation to improve. Sex isolation would, however, offer the possibility of maintaining sex-role differences that appear to underly male/female dominance structures. Many women, lacking role models in integrated settings, would tend to retain an emphasis on expressive orientations. Many males, also lacking models, would retain instrumental orientations. Maintenance of the status quo, however, would perpetuate the school's traditional role in differentiated sex-role development. Segregating the sexes would contribute to the perpetuation of existing differences and distinctions, leading one to ask whose interests would be so served? It is not clear that it would be primarily males' interests, since some evidence suggests that, even if male roles lead to occupancy of dominant positives in society, many males express anxiety or reservation about the sacrifices achievement norms impose on personal values, which suggests a need for expressive role models (Komarovsky, 1973). Females, not already possessing instrumental values, would have less opportunity for developing them. Thus segregation would ill-serve them. Members of "minority" groups and of lower social status groups might also have diminished opportunities to acquire successful achievement strategies even though some individuals might argue that they would have the advantage of preserving the integrity of their group values and would avoid assimilation into middle-class domination structures.

Distinctive segregative sex-role development, then, can only with difficulty be viewed as advantageous to individual students themselves. Such advantages would accrue to them only insofar as their distinctive specialized development equipped them to fit into ascriptively stratified, highly specialized, differentially-rewarding division of labor in societal institutions outside the schools. Students, of their own volition, might well choose educational experiences of this nature. Yet, it is not clear that they are afforded the choice since primary and secondary socializing agents such as the school foster differential development according to a host of ascriptive criteria. Not the least of these criteria are sex, race, ethnicity, and language, which form the basis of societal stratification patterns to which the school is subordinated, though it also functions as an agent fostering the development of dominance/ subordinance structures on the part of its clients. Through sex-typed educational authority structures, pervasive sex-differentiating norms conveyed by teaching personnel and practices through structured competition (socially and scholastically), educational reward structures enfranchise winners to take most of what is to be had and disenfranchise losers from taking much of anything.

In this context, sex role cleavages associated with incompatible instrumental/expressive orientations in the school can be viewed not merely as a male/female problem (though many view it as such), but as a stratificational problem revolving around the liberal capitalist dilemma of reconciling rhetorical egalitarianism with the necessity of allocating scarce societal resources and rewards to unequal competing contenders, whose needs and demands exceed the resources and rewards available (Block, 1973; Bakan, 1966). The existence of role strain in the school must, therefore, be viewed from a larger perspective. The viewpoint that attributes all manner of educational dysfunctions--from behavior problems to sex-differentiated performance--to the presence or absence in the school of one or the other sex, or to differing personal qualities attributed to one or the other sex, must be placed in a more macroscopic, stratificational context. Psychological attributes and intersex social dynamics, as alleged causal factors, must be seen not merely as personological phenomena but as outcomes of larger political and economic phenomena associated with stratification.

For example, Zeigler (1967) expressed his concern with what has been referred to as the feminization of the school (Sexton, 1969), both in terms of teaching behavior and student sex-role development. This feminization is considered to be especially prejudicial to males and provacative of male student behavior problems, which are interpreted as rebellion against the "feminizing" influencing of the school.

Zeigler analyzed the disappointing outcomes of recruiting large numbers of males into high school teaching, which has lead, "to the playing of feminine roles by men" (Zeigler, 1967, p. 12). Men were initially recruited to establish classroom authority since

> educational psychologists believe that the child's need to identify with a father figure offers a good way through which to establish the teacher's experience. The identification problems are not very severe for girls. However, if a boy establishes an emotional contact with women's teachers, it is believed the school can offer

> him little in learning a male role, for women represent the values of mothers and homemakers and can hardly be expected to provide male guidelines. (p. 12)

Such authority is needed, Zeigler adds, quoting Richard Hofstadter, because in America "teaching has been identified as a feminine profession. The American masculine conviction is that education and culture are feminine concerns" (p. 13). What is implied is that female teachers have proved unable to make education (and culture) in the schools desirable, palatable or imposable, and men are required to provide a male role model (perhaps to compensate for absent fathers) and to impose discipline upon otherwise unruly children. The problem is seen not as the absence of fathers from home and their failure to provide adequate "male" role models, but as the presence of women in the school. The argument is all the more interesting when it observes that male teachers have not only failed to compensate for these needs, they have also failed, despite their presence in the school, to break the stereotyped notion of teaching as a low-status feminine occupation. The writer cites Willard Waller's decades-old observation. "It has been said that no woman and no Negro is ever fully admitted to the white man's world. Possibly we should add men teachers to the list of the excluded" (p. 14). Zeigler continues:

> Males not only suffer degradation of status by working in a feminine occupation, they also incur considerable degradation of financial rewards. . . . Not only are male teachers doing women's work, they are also getting paid women's wages for doing it. . . . It is nonetheless damaging to the male ego for a man to be on financial par with women. In particularly every other occupation, financial discrimination is against women. (p. 15)

As a solution, he proposed: "As long as men and women are paid equally, job dissatisfaction among male teachers will not be reduced. The obvious, if unconventional, remedy for improving self-esteem of male teachers, then, is to introduce some sort of male-female salary scale differential" (p. 21).

Zeigler's solution of differentiating financial rewards moves his analysis of male/female role strain beyond differing psychological attributes as the cause of conflict, to that of status inequities, and thus comes closer to stratificational phenomena.

At first, he appears to focus on the differing attributes that he associates with males and females, much like the instrumental/expressive divergence. But his subsequent focus on male/female power relationships and status inequities within the school broadens his analysis to socioeconomic and political factors. The transition, however, is not surprising, for the instrumental/expressive categorization may be viewed as implying dominance/subordinance (Millet, 1970). This categorization adequately describes not merely male/female relationships in particular, but most types of dominance/subordinance relationships in general. If the male's role is initiating, autonomous, and dominant, the perfect complement is a role that is passive, dependent, and subordinate. If the former is to seek power and obtain it, the other must abstain from it or relinquish it. Male/female differentials in instrumental/expressive qualities reflect not merely the type of relationship that the powerful would impose on the powerless, but also the qualities that the dominant partner would like the subordinate to cultivate to complement his/her own. Hence education, culture, the arts, and emotionality can safely be left to the "weaker" sex, whereas the stronger pursues status, influence, and material rewards.

Indeed, such a description of dominance/subordinance relationships may help illuminate what resembles a subtle war between the sexes in the schools over status and rewards, as depicted by Zeigler. However, dominance/subordinance phenomena involved in school life have many facets of which interpersonal relationships between techers are but one. Student roles of the two sexes have been seen to comprise divergent, conflicting, and competitive dimensions. The same can be said of male and female teacher roles and also of administrative statuses. Students and teachers are both subordinated to a male-dominated authority structure, comprising school administrators, lay school boards, and governmental structures at local, state, and federal levels. The school system as a whole, too, is subordinated to economic systems, via one of its primary mandates, that of transmitting knowledge, abilities, and work skills to individuals. These individuals will perform specialized tasks in a hierarchically-organized, differentially-rewarding division of labor, based at least in part on ascriptive criteria such as sex, race, ethnicity, culture, and class (Spring, 1972; Bowles & Gintis, 1976).

In this light, male/female conflict in the school may be less a question of differing personalities and motivation than it is a status conflict over who is going to obtain the lion's share of status, power, and rewards, given their limited supply in educational settings. Male teachers, as depicted by Zeigler, are rebelling against a dominance system that they, along with women, are failing to dominate. They fail to have the ego supports of obtaining superior earnings for equal work, of controlling institutional power relationships, or of obtaining social recognition for their contribution, given the inferior status (equated with the "feminine" status) of education.

Thus male/female role conflict within the school, among pupils, teachers, and administrators of both sexes, relates to larger stratification phenomena of psychological, sociological, economic, and political components. The psychological and sociological ingredients involve the creation through socialization processes of two distinct sets of need-dispositions instrumental qualities for males--"aggression, intelligence, force, and efficiency" (Millet, 1970, p. 26)--and expressive qualities for females--"passivity, ignorance, docility, virtue, and ineffectuality." At the same time, each sex is socialized into distinct but complementary role expectations and behaviors that involve a division of labor. This division is intrafamilial, as well as economic, social, and political, in which the power and influence of their respective status of male and female are fundamentally unequal. The psychological component (i.e., traits), and the sociological component (i.e., roles), are held in place simultaneously through primary group socialization by the family and by secondary group socialization through the school and governmentally through the political component (i.e., the state). Traditionally, the patriarchal forms of the family and of the state have reciprocally reinforced and legitimized each other through the role of males as head of families and states, and through the codification of male legal predominance over wives and children, property, inheritance, income, decisions, and rights of participation in political, economic, and social institutions including education (Jaquette, 1974).

It is in this context that some have discerned in the traditional division of labor an attempt to arrest women's psychosocial, economic, and political development at their biological component: "Sex role assigns domestic service and attendance upon infants to the female, and the rest of human achievement, interest and ambition to the male" (Millett 1970, p. 26). The psychological, sociological, and political components interlock, first creating "enemy garrisons" within female heads through the notions of female inferiority and male superiority as manifested in negative female fantasies of the "fear of success" and "imposter" varieties. Then restrictive role definitions as found in the school--including unequal distribution between the two sexes of rights and obligations, sanctions and rewards--are attached to the statuses. These are imbedded in hierarchies of power allocated on the basis of ascribed characteristics including, but not limited to, sex.

In 1976, Sexton observed that in America, private and corporate wealth and the elites that dominate them surpass in impact that of the wealth and elites in government. Hofstadter's reference to the inferior status of education and culture calls attention to the predominance that the free enterprise system enjoys in American value systems compared with that of governmental and educational institutions, with the exception that education prepares certain individuals for the indispensable superordinate and subordinate positions in the economic system.

The subordinate role that educational institutions play vis-á-vis the economic systems results in their being viewed as on a par with the inferior status of women. This is not because they express stereotyped feminine qualities and roles, but because, like females, except when females and the schools produce human resources for the economic system, they are viewed as societally marginal, effete, and impotent compared with the centrality, strength, and impact of the economic system. Education and schooling have been regarded as so marginal that the occupation of teacher has been relegated to another societally marginal status, that of female. But this is primarily a confluence of inferiority, a result of the American stratification system in which males in the past have been too valuable and scarce to occupy such a status, with the exception of lower socioeconomic status males who moved into teaching positions after World War II as an avenue for upward mobility.

None of these points denies that school systems, by virtue of their dependence, contain their own dominance systems. For despite education's marginal status, the socializing role assigned by society to schools, plus the substantial resources allocated to schools to provide nearly full-time child care to allow both parents to enter the work force, have made it an attractive enterprise for the managerial talents of significant numbers of males. In order for schools to prepare specialized manpower for the economic system, including managerial, scientific, and skilled workers, and to decrease the conflict potential of sharply distinctive racial, ethnic, and social class groups, in the interests of productive collaboration in economic relations, it is necessary to develop a highly organized system for managing large numbers of individuals within limited space for the major portion of the day. So the schooling enterprise, despite its lack of status compared with other societal institutions, has acquired a male managerial overlayer, whose sex-biased character persists today. More than two-thirds of elementary and secondary school teachers are women, but only about 15% of principals are women, and only about one-half of one percent of superintendents are women. Females are better represented in subordinate administrative positions, such as assistant principalships, but still account for only about one-third of the total number of such positions. They represent only 7% of deputy associate or assistant superintendents. With respect to school boards, only 20% of the members of local school boards in the United States are women. They tend to be more active in parent-school organizations, but it has been observed that such groups as PTAs tend to be largely controlled by principals and superintendents who are usually males.

Thus schools tend to be the "enfants pauvres" of stratification systems that place the highest value on economic institutions that are dominated by men. What little status the schools do enjoy they acquire from their contribution to the maintenance and expansion of the economic system by the social control wrought through the socialization processes within the school. The school imparts different roles to the two sexes to differentiate their knowledge, abilities, and skills to meet the requirements of the sexual divisions of labor in societal institutions. The school and the females who occupy most of the administratively and politically inferior statuses within them suffer from the same public degradation, not because they are particularly feminine, but because they are the inferiors of juxtaposed dominance structures organized to service the economic system first, and the political system that supports it, second. Furthermore, males who enter into this system as teachers or administrators cannot overcome its female image, so subordinate is the school to political and economic authorities. Male and female roles in the school--whether pupil, teacher, or administrator--are dependent upon, and reflect the dominance structures set up outside and inside the schools to control what goes on within the schools in the interests of a sex-, racially/ethnically-, and class-differentiated division of labor.

Administrators, teachers, and students tend to be tightly and directly controlled by locally selected boards of education. The boards tend to overrepresent middle- and upper-class socioeconomic groups, particularly property owners, whose interests in schools tend to be quite well-defined class definitions of who should be educated, and to what ends. Furthermore, state and federal mandates and aid are channeled through legislatures and executive agencies controlled by males, and, in particular, individual and corporate taxpayers who provide or withhold funds to operate the schools.

From this viewpoint, then, sex-role strain within the school fits into a more global stratification system, of which the school is a component. The school socializes members of the different sexes, social classes, and ethnic groups into different values, motivations, aspirations, and expectations, and allots them different statuses and roles, and the rights and obligations that go along with them. What is going on within the school is not merely a variant of a war between the sexes but a manifestation of the continuing societal drama of deciding which individuals belonging to which groups--of which sex is but one of the foremost--will obtain what kinds of measures of what the society values, possesses, and can allocate through its institutions.

The Learning/Teaching Transaction and Sex Differences

When one considers the evolution within the school of the social differences in the roles of the two sexes in the light of global stratification processes, the school may be viewed as both accommodating and reinforcing these processes. Sex-role socialization within the school helps to mold psychological predispositions that students bring with them as well as the patterns of interaction through which political processes--

internal and external to the school--allocate resources, opportunities, rewards, and life chances differently between the sexes, racial and ethnic groups, and social clases. These stratificational processes reflect and reinforce the existing distributions of power and status among various groups, and only occasionally modify such distributions to reflect changing power relationships.

Although social differences in males' and females' behavior reflect genetic/biologic factors, and different patterns of physiological development, cultural factors appear to exert a greater influence, and to open up greater possibilities of variation. Genetic/biologic factors may set in motion certain developmental processes, but they do not exert so strong or invariable an influence that they alone determine the direction of, or set insuperable limits to, developmental possibilities. Consequently, those responsible for the design and management of learning experiences have a crucial mandate. That mandate is to identify and counteract any influence that the school per se may be exerting in reinforcing or imposing arbitrary sex-typed interactions and outcomes in order to assure all students, regardless of sex, that the resources of values, attitudes, commitments, skills, knowledge, time, and opportunities are available to them. The school's role is to assure distributive equity and sufficiency in responding to the needs of all students and to guarantee them minimal levels of functional competency and personal satisfaction. The extent to which the schools could, or should, compensate for previous and existing discrimination by external institutions and socialization processes is theoretically, if not practically, a separate issue from their mandate to discontinue such practices within their school.

It cannot be guaranteed that the allocation of resources independently of arbitrary criteria will, in fact, modify sex stereotyping of interactions, access, utilization, and outcomes, but the school is nonetheless required to exercise this neutrality. Even if the family can be subjective and biased in its socialization of the two sexes in terms of intent and effects, the school cannot. Certainly it cannot insofar as it respects egalitarian societal norms and the legal prohibition against discrimination on the basis of sex.

Boys as well as girls, teachers as well as administrators, regardless of racial, ethnic, cultural, and social class, have reason to support this principle of neutrality today. It is all that can protect them, other individuals, or groups from the imposition of as yet unanticipated arbitrary criteria tomorrow.

Practically, this viewpoint has a number of implications for the management of learning experiences. They involve, first, educational government and administration, including decision processes and policies allocating values and resources. Second, human and material pedagogical resources, and the manner in which they affect students, are implicated.

In terms of governing structures, equitable male and female access to, and participation in, these structures must be encouraged. Such participation would serve to provide sex-balanced role models to students, and to enable each sex to become familiar with the other's knowledge base, abilities, skills, and interactive styles, and to infuse the full range of them into the decision process. Sex balance among administrative decision-makers and executives needs to be assured for the same reasons as it does for legislative decision-makers. Male or female domination of legislative decision structures would create undesirable role models and would compromise the perceived legitimacy of decisions.

At the same time, policies allocating values and resources to and within school systems need to be scrutinized for sex-balance in their objectives and impact. Even though financial outlays and the sex-related discrepancies within them cannot be directly correlated with sex-differentiated performances, gross inequities cause resentment and dissension and convey to the less favored group evidence of lack of societal support for their aspirations. The content of such policies will contribute to sex-differentiation, as well as sex-role strain, anxiety, and conflict by fostering differences in knowledge, abilities, skills, social status, and opportunity among students, on the basis of group membership associated with sex, race, ethnicity, language, or social class. If policies seek to use the school as an agent for the reinforcement and perpetuation of dominance/subordinance structures of societal stratification systems, they will inevitably accentuate sex differentiation. School policies and norms establishing individualistic, materialistic, competitive, differentially rewarding, socially-divisive, and segregating patterns of interaction will serve existing sexual divisions of labor. Sex-role strain found inside and outside schools will thereby be exacerbated. On the other hand, policies and programs designed to facilitate the fulfillment of individual physical, affective, cognitive, and social needs and preferences, and the development of a minimal level of basic knowledge, abilities, and skills required for self-management and for material and spiritual well-being will decrease interpersonal anxiety and conflict. Socially disruptive sex differentiation stemming from the subordination of individual needs to external systems will thereby also be lessened.

Sex-balanced decision structures and sex-fair individually autonomizing policies and programs need to be complemented by unbiased human and material pedagogical resources. Although existing evidence does not show that sex of teacher is significantly correlated with sex differentials in achievement, there are a number of indications that sex of teacher and student may interact to influence thus far elusive affective, social, and cognitive phenomena at the classroom level (Guttenberg & Bray, 1977). The sex-role socialization process has been shown to be extremely complex, and the influence of specific influences is difficult to pinpoint. A pedagogically sound rule of thumb is to deliberately structure diversity into learning environments, even if cause and effect relationships are unproved. Students of both sexes need access to teachers of both sexes in a variety of settings. These settings must be managed so that they act not as self-fulfilling, sex-stereotyping prophecies, but as opportunities for male and female students and teachers to diversify and broaden their experiences, aspirations, and accomplishments.

For example, on the basis of a number of research findings, it seems to be within the control of classroom teachers to seek to reduce sex-typed interactions and outcomes by several classroom management approaches and pedagogical techniques. One such approach is to structurally diffuse interactions in the classroom and to focus activities and attention away from the boy-girl sex-role stereotyping games which have been noted in the classroom (Cohen, 1973; Fowlkes, Note 6). Acting out one's gender role and sex-typed student role appears to be a major feature of school-centered activities, for both boys and girls, as well as school authorities and only serves to reinforce role stereotypes and maintain sex-based divisions of labor. Task-centered, active student roles, in which pupils of both genders collaborate on the basis of equal status on self-initiated and self-directed endeavors, break down sex-stereotyped interactions among pupils, and between pupils and teachers. Pedagogical and classroom management techniques have been devised that weaken the penetration into the classroom of the societal dominance structures introduced by the pupils themselves and by the influence of external economic and political institutions (Guttenberg & Bray, 1976).

Structurally-diffused interactions primarily require changes in teacher expectations and classroom management techniques and lead to greater individualization of classroom instruction. Teacher expectations must incorporate principles of equity so that teacher attention, time, and support are equally alloted among students likely to succeed and students most in need. These expectations must be less tied to the existing hierarchies of status that students represent to many teachers, and to the narrow conceptions of educational accomplishment that limit student developmental outcomes to cognitive achievement and that subordinate human growth to performance.

In addition, teachers need to curtail their fostering of interstudent rivalries as a mechanism that they can manipulate for control. Too often such rivalries are sex-based, and though they may facilitate teacher control over potential disruption, the tensions they create may spill over to areas of no less import. Teachers who visibly reinforce female docility and mischievous male bravado not only contribute to sex-role stereotyping on the part of both, but increase the potential of both to interfere with each other's learning because of intersex rivalries.

The problem may stem less from the teacher's search for control than from the teacher's institutional role of having to impose on unwilling students socializing and learning experiences that they are resisting. Contemporary as well as traditional schooling continues to define student needs and educational objectives through a whole chain of decision makers inside and outside the school. Again, sex differentiations in the school represent a subset of dominance structures established within the school to reflect and reinforce those structures in the environments of the school. Insofar as the school helps maintain them, sex differentials in achievement status and opportunity will result, not because of innate, insuperable sex differences, but because of deliberate cultural reinforcement and accentuation of those that students bring into the school.

Weakening the influence of stereotyping factors penetrating into the classroom both from above (through eternal, institutionalized systems of economic, political, and educational control) and from below (through the family and its sexual division of labor to socialize pupils prior to and simultaneously with schooling) would be the equivalent of an autonomizing process for both sexes. The autonomization would facilitate their release from traditional stereotyped notions of masculine and feminine values, attitudes, aspirations, and behaviors. Individuals of both sexes would be able to choose from traditional sex- and gender-based, male and female repertories those attributes and behaviors that are most useful for the kinds of activities they desire and need to engage in to perform necessary everyday tasks. The desirability and need to transcend traditional sex roles has been increasingly documented (Bem, 1975), starting with the finding that males and females who express most satisfaction in terms of their own mental health and those who perform most effectively in everyday life tend to be those who integrate traditional masculine and feminine qualities and behaviors into their roles. Such integration gives them flexibility and assurance in dealing with diverse situations at home, at work, and in social life in general. This combination of traditionally perceived "male" and "female" attributes and roles, referred to as androgyny, characterizes many men and women already. (Thirty percent of tested individuals of both sexes expressed androgynous personal qualities.) Evidence also suggests that conscious efforts to androgenously transcend traditional sex roles may be an individually satisfying and mentally healthy way of dealing with role stress of various derivations, including but not limited to divergent and conflicting sex-role orientations (Bem, 1975; Yorburg & Arafat, 1975). In the context of the school, research suggests that encouraging pupils to engage in task-oriented behavior not only de-emphasizes and reduces the salience of sex-differentiated behavior, but may encourage pupils to develop those androgynous combinations of qualities, motivations, and interaction patterns that equip them to deal with the challenges facing them more effectively (Cohen, 1973; Fowlkes, Note 6).

Pupils with pronounced task-orientations have a greater tendency to pursue autonomously derived goals that meet their needs as individuals rather than as members of one sex or the other. Encouraging this orientation gives them greater opportunity to transcend mere acting out and development of sex roles, or sex-typed participation in the various dominance/subordinance structures and processes observed in the school.

This is not to say that sex-role development would not occur within the schools, or, indeed, that it should not. Rather, individuals would pursue needs and desires related to sex-role developments as they arose, but in conjunction with the panoply of developmental needs and desires that are explored and realized in the context of the school. Sex roles and dominance structures would lose the ascendancy that they now appear to exercise in many classroom transactions.

Evidence suggests that teacher facilitation of an "active learner role" as opposed to a "passive pupil role," coupled with teacher management of a less structured, more spontaneous and open classroom, can contribute to improved attitudes and outcomes for both male and female students as well as to a decrease in sex-typed interaction patterns (Fowlkes, Note 6). Stereotyped sex roles and student-student and teacher-student interaction patterns in the cases studied were weakened, even where reduction of sex stereotypes was not the original intent of the innovative pedagogical strategies employed. The strategies had the effect of modifying the roles of both sexes. The focus was on more androgynous, task-oriented roles, and fewer stereotyping, sex-biased student-student and student-teacher "games" were noticeable.

The Politics of Pedagogical Design: The Case of Sex Differences and Educational Equity

A widely held goal in American society, one which has become increasingly explicit in the last two decades, is to render universal access to schooling, as well as the actual utilization of educational resources and its outcomes, independent of one's membership in the different social groupings of the society. During this period, it has become more and more apparent, through improved evaluation methods and statistics, that membership in particular social groupings is correlated with differences in rates of access to and utilization of educational resources and outcomes such as achievement. Members of different social groupings, stratified by ethnicity, culture, income, type of employment, education, prestige, and political power, display different and unequal patterns of access, utilization, and outcomes. These patterns contradict the American value that schools constitute the institution that can act as the guardian of the democratic norms of equality, by affording all individuals and groups the possibility of acceding to the prestigious and rewarding economic, political, and social statuses of the society. Schools have not eradicated patterns of inequality, but, in general, reflect and even reinforce them by their differential allocation of access, utilization, and outcomes among the different social groups.

In view of such findings, American egalitarian goals and the intention of societal groups to assign schools the role of attaining those goals were reaffirmed through the gentle and not-so-gentle prodding of deprived groups themselves. The latter have succeeded in demonstrating to federal, state, and local government legislators and education authorities, as well as to large segments of public and scholarly opinion, that stratification mechanisms both cause these differences in access, utilizations, and outcomes, and, that the school, by way of its allocation of resources, reinforces them.

Consequently, schools, particularly those in urban areas with a high concentration of minority groups, have been allocated additional resources, in order to reduce and eliminate these inequities. The reallocations were made on the premise that previous discrimination could be rectified by changing the amount and type of financial, organizational, and pedagogical inputs directed to the various groups. It was also believed that existing knowledge would indicate what changes in the different types of input would be adequate to the task. These premises rested, at least in part, on the belief that educational institutions could be made to respond to revised directives, and that educational technology underlying the learning/teaching process was adequate to the task.

More recently, however, despite modest, and in some cases, substantial improvements in the equality of distributed resources, the assumption that stratification-based deprivation could be rectified simply by reallocating resources and intensifying traditional pedagogical treatments has been questioned. Educational reallocative policies, programs and structures, for example, Head Start and ESEA Title I programs, have not brought about generalized improvements in the social distribution of access, utilization, and outcomes (Burnes & Moss, 1978). The last decade of experience indicates to several schools of thought that such improvements require not merely the concentration of greater resources on pupils from particular social groupings, but on the redesign of school management and pedagogy. It is now believed that the problem lies with the multitude of individual learner characteristics that may be of consequence to access, utilization of opportunities, and the attainment of desired outcomes (Gordon, 1977). Equalizing opportunity, in this perspective, is seen as requiring not merely the reallocation of resources but the development of complex, diagnostic processes integrated into a learning/teaching process that is designed to respond to an intricate interplay of individual learner characteristics and group membership influences.

It is thought that variations of functional learner characteristics may be as important, if not more important, than variations in group memberships. This thinking is based on the recognition that each social grouping is far from homogeneous in terms of the characteristics of its members, particularly with regard to their functional learning traits salient to the educational transactions. Within each group there may be a wide range in the frequency distribution of each trait, despite the apparent simplicity of measures of central tendency, which mislead the unwary into making unjustified generalizations across the group, and subsequently into comparing one group with another. Even though there may be gross differences in measures of central tendency of distinct groups regarding specific traits, the wide range of frequencies within each group engenders the possibility that some members of one group might be more likely to resemble members of other groups than members of their own group, who do not display such a trait. If one excludes from statistical analysis the extremes of groups being measured for a particular trait (e.g., either those ranking very high or low on a particular trait), thereby reducing the overall range of dispersion, the groups' members cluster together more homogeneously so that the groups appear statistically more similar. For example, most girls and boys have activity levels in the middle range. However, the female sex has more members whose activity levels are low, and the male sex has more members whose activity levels are high, even though such boys and girls are exceptional (Rensberger, 1978). Removing these extremes from the statistical portraits of females and males thus mollifies group differences and "corrects" misleading generalizations as to the distinctiveness of each group, based on the distortion introduced by the extremes.

In view of these considerations, the relative importance to be attributed to group membership, be it based on sex, race, ethnicity, or social class, becomes an issue. In actual practice, to continue with the example of activity level, one is faced with a range of options for dealing with pupils in the hypothetical context of physical education. Some people might prefer to form groups based on similar activity levels, should they be inclined to focus on activity level, but to exclude the extremes as well as biological sex as a classifying category. This would help to avoid stereotyping boys and girls on the basis of misleading generalizations from apparently distinct profiles.

There are further options. Some people might prefer to treat pupils not merely according to biological sex, size, muscular development, or activity levels, but according to pupils' affective orientations, such as their motivations and preferences. Pupils, irrespective of sex or activity levels, may prefer gymnastics involving team or individual competitive sports or gymnastics involving team or individual noncompetitive sports. Or they may have high or low motivation regarding gymnastics in general, have highly developed or poorly developed motor skills, both irrespective of sex or activity levels. Motivations and attitudes here might well depend on group membership since evidence shows that different ethnic and cultural groups, as well as different social classes, sometimes exhibit varying patterns of preferences for, and participation in, sports.

In addition to pupils' own needs and desires, other options emanate from the role that society may wish physical education activities to play. In the United States many groups support interscholastic competitive sports, especially for males. In some countries, like Switzerland, physical fitness is considered essential to national defense, and physical education is subsidized by the federal government. In both cases, there may be considerable external pressure on school officials and students to conform to standards and requirements that may not be of their own choosing.

Consequently, matching pupil traits with pedagogical treatments requires consideration not only of sex class membership and activity level, but also of pupil needs and desires, of ethnic and social class membership, and of external constraints. Each factor may be considered more or less legitimate by one or another group--be they educators, scholars, students themselves, or their social reference groups, policy makers or political interest groups. Just which should be given precedence can involve both political and pedagogical judgments on desirable outcomes and the attainment of such outcomes. Should girls be given precedence over boys in the allocation of resources and in the intensity and types of pedagogical treatment, since physical development of girls generally lies below their potential? In this light, should one consider them to be a stratificationally deprived group and thereby deserving of compensatory treatment? If so, does existing knowledge and pedagogical technology indicate exactly how one might compensate for the deprivation in order to modify outcomes? Or should both sex classes be treated the same, since most of their members tend to exhibit the same kinds of activity levels. One might argue, indeed, that each group should be given the same opportunities for access, utilization, and attainment (regardless of whether they are similar or different in terms of their capacity to be motivated by) and to benefit from educational opportunities. Or, irrespective of sex class, activity levels, needs or desires, should the allocation of resources and pedagogical treatments reflect the priorities of external groups seeking to have educational outcomes meet their preferences and definitions of needs? Advocates of professional athletics are an example of such a group.

Obviously, which of these options ought to be selected depends on one's values and interests. From the standpoint of the pedagogue, the most weighty considerations are likely to be those that revolve around the question of what works in the classroom, in terms of maintaining order and control, respecting pupil and teacher preferences, motivations, and morale; attaining developmental outcomes and keeping potential critics satisfied, placated, or dormant. Which factors will be given most attention will also depend on teachers' own ethical commitments, as well as knowledge about group phenomena and functional learner characteristics. For these have implications for learning/teaching transactions, particularly as they affect diagnosis of the salience of sociopsychological factors to the developmental processes occurring in the school setting. Some schools of thought insist that group membership should be the overriding consideration (e.g., the recent ethnopedagogical thrust in some contemporary pedagogical thought and practice as in the work of Berger, 1971), and others suspect that functional learning characteristics must be the overriding consideration (Gordon, 1977). It may well be that neither provides the key to overall effectiveness. Certainly, for some pupils, their group membership may be most relevant pedagogically at one time, requiring that foremost attention be given to considerations of status and identity, and of self-concept and self-acceptance prior to more direct pedagogical factors. For other pupils, their group membership may be of less importance to the developmental process than certain learner characteristics, whether they involve motor, cognitive, or affective functions. Other possibilities are that group membership and functional characteristics may be of equal importance, or that they may alternatively decrease or increase their salience over time.

In any case, a teacher faced with a class of 25 pupils displaying heterogeneous social group memberships, as well as heterogeneous functional learner characteristics, is hardly likely to be able to make precise diagnoses giving precedence to either group or learner characteristics for a whole class or even for more than a few pupils. Any diagnosis would have a short-lived validity, since the objective of the intraclass groupings according to considerations of equity would be both to bring all students to minimum levels of mastery and to allow the individual differences and preferences of each pupil to develop naturally. At the time when either or both objectives would have been attained, regrouping would be required.

All of which is to say that orchestrating pedagogical treatments, teacher style and preferences, learner group or functional characteristics, preferences and motivations, and external requisites is a highly complex process. If one's goal is equalizing the social distribution of outcomes and rendering them independent of either group membership or functional traits, the existing knowledge and pedagogical techniques are probably inadequate to attain such ends in the near future. Currently available scientific information would be unable to decrease the present probability of fairly random outcomes of the learning/teaching process, except with respect to the fairly stable but gross relationship between socioeconomic status and school achievement.

This lack of control, however, does not mean that the learning/teaching process is, or should be, also random--that is, without contributing to the reduction of uncertainty in educational outcomes. The individual teacher and administrator is by no means destitute of any knowledge at all--the problem is that the knowledge is not adequate to make more effective the processes that we know of for changing people. There are some gross relationships that are fairly well known and that guide the experienced teacher to adopt some fairly explicit classroom procedures to reduce the uncertainty of outcomes, even though they do not thereby render them predictable. It can be seen that frustrating as the inadequacy of pedagogical technology may be for those who wish to improve development outcomes, in some respects it may, in part, be a blessing in disguise. Lack of control of the pedagogical process, both from the classroom and societal level, ensures that it not be used on a large scale to make very big errors in the way that schooling is used. It removes the learning/teaching transaction from too much external interference into what is presently in many ways an undeterminable human relationship, which can be used to attain certain kinds of concrete outcomes, like learning to read and write, but eludes attempts at cruder though perhaps less apparent attempts at over-zealous immodest social engineering. Schooling may not be able to accomplish everything sought by one group, yet by its failure it may placate an opposing group.

Thus social group membership and functional characteristics have to be taken into account, even though taking either or both into account does not guarantee particular outcomes. Pedagogical consideration of such factors may be a necessary condition for effectiveness without being sufficient. Group characteristics and individual learner traits, teacher style and preferences as well as external requirements, are part of the immense array of variables operating in the elusive equation of human development. The uncertainty surrounding our immodest attempts to control it before all the data are in is esentially an occupational hazard.

In sum, what appears to have happened is that the political processes by which groups have made their claims for better treatment seem to have been adequate for obtaining recognition and resources, but insufficient for modifying the social distribution of patterns of access, utilization, and outcomes of schooling. Too many other factors have been found to impinge upon the learning/teaching process, eluding understanding and institutional pedagogical control.

The fact that much of our present consternation over our educational inadequacies stems from the proddings of deprived social groups should not mislead us into thinking that because legislative, judicial, and administrative authorities have committed themselves to providing everyone an equal chance to accede to the prestigious and rewarding societal statuses, schools have at their disposition the political consensus, the intraschool commitment, and the pedagogical technology to do so. Educators, nonetheless, are required to focus on those groups for whom developing pedagogical knowledge is most urgently required, and on the expanding number of factors that we are coming to recognize as essential elements of the learning/teaching process.

Consequently, we need not assert that in view of our recent failures to improve the educational attainments of deprived groups, we must now no longer teach to these social groups, but to the functional learner charcteristics of socially undifferentiated children. To do so would be to obfuscate political realities and moral imperatives. The object of pedagogy is to teach people. The object of a pedagogy of equity is to ensure that all individuals, but particularly those most in need, attain minimal levels of competence. The current argument concerning whether social groups or functional learner characteristics comes first befuddles the unwary. This includes many, if not most, practitioners. Worse still, it can defuse the political momentum that deprived groups have built up to gain an influence over educational resources and processes during the last two decades. It gives scholarly and scientific support to forces aiming at their political demobilization, by giving pedagogical arguments for shifting the focus from social groups to the individual. Individualization of instruction is not merely a realistic strategy for reducing the pretensions of generalizable pedagogical theory and practice, and for bringing the problems down to the level of their concrete manifestations where they can be more effectively handled by more modest pedagogues and researchers. It is also a political strategy, even if many of its adherents are unwitting.

One cannot avoid the fact that recognizing that the scientization of the issue may strike a devastating blow against the political forces providing the impetus for equalizing educational opportunity, which were mobilized during the last two decades by special interest groups representing deprived minority groups, and, more recently, representing women. If the route to improving the social distribution of access, utilization, and outcomes of schooling is portrayed as requiring the dissection of social groupings according to functional characteristics alleged to be the primary keys to improvement, then poignancy of group membership and shared group characteristics that are relevant to the learning/teaching process will be diluted if not erased. Similarly, the influence of these groups in political processes, by which the educational resources are allocated and the policy directives formulated and implemented, will be eroded. This will leave the school free to continue to use its resources in allocating educational opportunity unequally among the different social groups, through the pedagogical subterfuge of meeting the needs of all through individualized means. To avoid this situation, the political and pedagogical responsibilities of educational managers are quite clear, even though fulfilling them would not at the moment guarantee the attainment of greater educational equity, although it may facilitate its attainment in the long run.

In the first place, educational legislators and managers must be knowledgeable about existing equity legislation, such as Civil Rights Act Title IV, the Educational Amendments of 1972, PL 94-142, etc., and comply with their legal requirements as they affect school policies, programs, and personnel. Such compliance is a long-term process, and structures must be implemented to adapt the legislation to local realities.

The adaptive process requires integrative vertical and horizontal task forces that look at legislation holistically. So much equity legislation is now "on the books" that it threatens to overload the capacity of systems to respond to it. Race, sex, national origin, exceptionality, and economically-depressed groups are the objects of extensive legislation. School systems must heed these political/governmental mandates in the allocation of resources, the setting of priorities, and the design and implementation of programs, but not at such a pace as to exhaust their institutional resources. Consequently, they must be allowed sufficient autonomy to implement the legislation according to their own designs and professional judgment. Federal legislation, which is becoming increasingly detailed and directive, may well be acting more to hamper local systems than to assure compliance.

Furthermore, the local management of externally-introduced legislative mandates must take into consideration the availability and mobilizability of local resources in support of these mandates. Local educational managers are locally hired (and fired!), and their reward structure may offer little encouragement to introduce changes emanating from other political environments. For example, federally-funded agencies, in order to promote implemention of equity legislation, need to be institutionally integrated with the power structures that control local school systems. Educational managers without local support and encouragement might otherwise turn out to be prime obstructionists rather than leader-catalysts.

Pedagogically, the same caveats must be reiterated. Teachers need to be familiar with the legislative mandates, yet left to exercise and develop their professional judgment and competence autonomously. Political/legislative educational mandates do not provide a tried-and-trusted pedagogy that is effective in all situations. Consequently, educational managers and pedagogues need to be knowledgeable about equity legislation and the groups it targets and to provide these groups with special attention. Paradoxically, it must treat the members of these groups as individuals, having preconception of neither group-ethnocentric developmental outcomes nor of pedagogy. Certainly, pedagogical treatments would be designed to help the group as a whole approximate more closely chosen developmental patterns and levels, which might be characteristic of select members of their own or even other groups they may wish to emulate. But the aim would not be to impose upon individuals norms of their own or other groups, but rather to select developmental outcomes that would equip them to meet individually-determined goals. Group and individual differences in physical, cognitive, social and affective development, and learning-related characteristics such as communication styles, time handling, and social interaction patterns would be examined and respected in designing group- and individual-effective learning experiences. However, group characteristics would not necessarily have to transcend individual differences, nor would individual differences have to transcend group differences. A group-based, individualized program of instruction is needed to meet the political and pedagogical principles of equity.

Conclusion

This chapter has explored the concepts and empirical findings regarding the nature and sources of sex differentiation manifest in the school setting. It has attempted to synthesize these concepts and findings to illuminate the common features of sex differentiation as they occur in early childhood and in school. The hypothesis was that linkages exist between genetic/biologic, psychological, and sociocultural factors to contribute to and reinforce patterns of sex differentiation. These relationships have been posited to lead to sex-differentiated development that is restrictive of human developmental possibilities, not because of absolute determinisms or uncontrollable processes but because of prevailing cultural values and socialization processes.

Genetic/biologic factors, particularly as they have differentiated the male/female procreative role since primitive times, were seen to provide an initial impetus to the sexual divisions of labor within the family, community, and workplace. These were subsequently reinforced by formal societal institutions, particularly economic and political systems, and through the assimilation by males and females of distinct gender identities and sex roles.

Long after distinct sex roles in procreation ceased to require pervasive sexual divisions of labor inside or outside the family, distinct gender identities and sex roles survived, via cultural values and socialization processes, which assigned different orientations and qualities to each sex. Sex differentiation was found to be reinforced by the predominance of the values of acquisition, material possessions in capitalist societies, and the economic systems that developed out of those values.

Children of school age were found to exhibit distinct sex roles, which in the school setting increased their distinctiveness with chronological age, as a function of influences external as well as internal to the school.

Influences internal to the school were found to include administrative as well as pedagogical structures that fostered sex-differentiating segregative patterns of social interaction among pupils and teachers of same and different sex. Parents, teachers, and public authorities inside and outside school systems were found to differentiate between the sexes in their expectations and treatments of students, particularly along instrumental/expressive dimensions. But it was conjectured on the basis of existing studies that males--particularly, but not only, fathers--may provide greater reinforcement to differentiate the sexes in accordance with prevailing societal values. Sex differentiation within the school was seen to reflect the influence of genetic/biologic factors, but that influence was seen to be of slight significance when compared with sociocultural influences.

It was found that these values and influences were encountering opposition on several counts. First, the human resource development movement has brought to the attention of educators, the public, and legislators the viewpoint that restrictive sex-role socialization deprives individuals of developing their full range of qualities and abilities. Regarding human beings as resources and instruments of national development, limitations in human development are considered prejudicial to societal growth and security. These views, despite their discordance and competition with those promulgating socialization for sexual divisions of labor, have gained growing attention in recent years.

Second, special interest group politics, which have become increasingly influential as political parties have become less pivotal, call attention to the need for improvements in group status in societal stratification patterns. Schools are singled out as part of both the problem and the solution.

In the context of principles of equity and sufficiency in the distribution of educational resources and opportunity, the schools are called upon to remediate inequities that other societal institutions create. Many sectors of public and private leadership do not take the egalitarian role of the school seriously, but others do. The schools are under increasing pressure to bring about greater equivalence in group performance, and are constantly assailed for anything that might be construed to compromise attainment of this objective. They are on the receiving end of a legislative overload of mandates, which neither the schools nor the legislators seem to have adequate institutional or technical control to implement. The battleground currently appears to have switched to the courts, but the school setting has not been left out of the action. It may, in fact, be the only arena in which any substantive progress can be made.

With respect to sex roles, although while the prohibitions are clear, it remains to be seen what sex-fair educational practices will lead to, either in terms of changing sex roles or affecting larger societal institutions. Students and school personnel are to be liberated from traditional sex-role stereotypes. However, what sex roles they will acquire remains to be seen unless one or another group moves in to impose its vision of ideal human development, thus exchanging one set of arbitrary stereotypes for another. The nature of the challenge presently before the schools is whether or not education, now to be freed from what have been shown to be unnecessary sex stereotypes, can become and remain a liberating experience. Or will it continue to be used as the means of imposing one group's values upon another?

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Chapter 5

Ethnicity as a Dimension of Human Diversity: Implications for School Processes and Policies

Carol Camp Yeakey

Introduction

This paper has two broad yet interrelated focuses. The first examines the phenomenon of ethnicity on a macro-level as a dimension of human diversity among America's people, with a discussion of its most salient ramifications. The second examines ethnicity on a micro-level in terms of the role it plays in the public school environment. To analyze ethnicity as an abstract variable isolated from societal dynamics and institutional structures and processes is impossible. Rather, the aim here is to understand ethnicity as an aspect of human diversity in our contemporary capitalist American society. Given the nature of our urbanized, highly industrialized, stratified society, overt conflict and competition for scarce and diminishing resources and goods between dominant and subordinate groups frequently occur (Antonovsky, 1960; van den Berghe, 1967). Some key issues of this struggle involve ethnic identity, assertiveness, self-interest, intergroup rivalry, conflict, power, societal norms, and institutional sanctions. This situation can be largely attributed to the fact that ethnic group rivalry and conflict have been enduring, persistent, and pervasive phenomena throughout the American experience.

The scope of this chapter has been narrowed to focus upon ethnicity in the United States, and will be confined to those ethnic groups that are presently most victimized by the dominant society, comparatively speaking, and that receive greater differential and pejorative treatment on the basis of their ethnic diversity. Such groups include blacks, Puerto Ricans, American Indians, and Mexican Americans. White non-Hispanic ethnic groups will be analyzed insofar as their experiences aid in examining the experiences of the aforementioned ethnic minority groups in the United States. Borne out by empirical evidence is the fact that

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This paper was written in dedication to the memory of the late Alma W. Camp.

blacks, American Indians, Puerto Ricans, and Mexican Americans are presently locked out of much of our society's bounty in the distribution and allocation of rewards, resources, and sociopolitical and economic prestige. That they presently comprise society's most "disadvantaged" in terms of having fewer such rewards conferred upon them is irrefutable. Nowhere is this more obvious than in our system of public schooling, where, as will be shown in later portions of this paper, ethnicity plays an important role.

A comparative historical perspective of the study of racial and ethnic relationships will be given in order to understand the development of the institutional structures that form the basis for intergroup relations today, for contemporary patterns of inequality are rooted in systems of intergroup relations initiated in the past. However, the powerlessness of the blacks, Chicanos, Puerto Ricans, and American Indians today is not wholly a function of oppression and subjugation in the past, but of those same factors operative in the institutional processes and structures of today.

There are those who would question the salience and import of the study of ethnicity and ethnic groups in modern society. After all, what is new about the conflicting relationship between ethnic groups and between majority and minority ethnic groups based on demands for prestige, respect, political power, and access to educational and economic opportunity? To be sure, historically speaking, there have always been such conflicts. But the research evidence suggests that there seem to be of late not only far more such conflicts but a rise in intensity in given ethnic conflicts on both a national and international scale (Connor, 1973). Although the scope of this study is limited to ethnicity in the United States, the relevancy of the discussion is not limited solely to the national scene in this country. Illustrative of this point, one has only to consider the ethnic group conflicts between Eritreans and Ethiopians in Ethiopia, ethnic Chinese and Vietnamese in Viet Nam, Anglophones and Francophones in Canada, Protestants and Catholics in northern Ireland, Bengalis and non-Bengalis in Pakistan, Malays and Chinese in Malaysia, Greeks and Turks in Cyprus, the Ibos, Hausa, and Yoruba in Nigeria, the Jews and other minorities against the Great Russians in the Soviet Union, and the Walloons and Flemings in Belgium, among others. Although one could not argue that the causes of ethnic conflicts are new, one could convincingly argue that their intensity, scale, and extent are.

Racial and Ethnic Groups

Perhaps one of the greatest problems encountered in the study of ethnicity is definitional. Are the terms racial and ethnic synonymous? To what does ethnicity refer? A critical review of the historical usage of both terms reveals that neither term has been used with precision. Several prominent researchers omit the term race altogether and subsume racially distinct groups within the broad category of ethnic groups (Schermerhorn, 1970; Shibutani & Kwan, 1965). When the term race has been used, it has been used to refer to linguistic groupings (Aryan, English-speaking), to religious groupings (Hindu, Jewish), to national groupings (French, Italian), and to quasi-scientific groupings (Teutonic). In this paper, a group is defined as a race when selected physical or biologically transmitted characteristics of the group are isolated and when their importance as differentiating factors is pronounced (Yetman, 1975). Barth and Noel (1972) suggested that the designation of a group as a race is largely, but not solely, a function of biological or genetic differences, but is also a function of society's perception that differences exist and are important.

An ethnic group is recognized by its distinct cultural characteristics (e.g., values, ideas, language, food habits, family patterns, mode of dress, sexual behavior, standards of beauty, recreational patterns, religious and political affiliations, and economic forms). Implicit in ethnic group behavior is a feeling of belongingness in which group members not only feel bound by common ties but are similarly regarded by the larger society.

Much ambiguity is created in the use of both terms because groups that are classified as racial may be ethnically distinct as well. For example, American Indians as a race contain the Apache, Sioux, Pawnee, Blackfeet, Cherokee, and a number of other ethnic tribes. The same is true for the white race, which contains Irish, Italians, Poles, Germans, Jews, and a myriad of other ethnic groups.

As the foregoing would suggest, one can make a definitional distinction between ethnic group and racial group. However, little of the dominant theory indicates that operationally they are distinct on a systemic level. The study of ethnic groups is for all practical purposes the same as the study of the dominant and subordinate racial groups in America.

The New Ethnicity

Old lines of division (i.e., culture, religion, political affiliation, and language) can be found between most majority and minority ethnic groups now in conflict. For at least the past century, most sociologists subscribed to what Milton Gordon (1976) referred to as the "liberal expectancy." That is, the expectation that the features distinguishing one group from another would inevitably wane in importance in modern society with, instead, an increasing emphasis upon achievement rather than ethnic or cultural ascription. The expectancy was that normative systems of education and communication as well as nationally uniform economic and political systems would have a similar leveling effect.

The Marxian "radical expectancy" is an extension of the "liberal expectancy," wherein class would become the main line of division between people, eradicating tribal, religious, and language distinctions as well as distinctions of national origin. Marx believed that interest determined by economic position would guide men to social action. Although neither perspective has yet to materialize fully, aspects of each philosophy are operative in our society today.

What has occurred in the sociological literature, as well as in the larger sociopolitical environment, is a shift in our general understanding of ethnic groups. "Formerly seen as survivals from an earlier age, to be treated variously with annoyance, toleration, or mild celebration, we now have a growing sense that they may be forms of social life that are capable of renewing and transforming themselves" (Glazer & Moynihan, 1976, p. 4). Today, the eradication of ethnicity from our modern society is as utopian an exercise as the eradication of social class stratification from our society.

The foregoing is a rather profound assertion, given the fact that a voluminous amount of the sociological dogma of the past century-and-a-half erred in asserting that ethnic groups were not only assimilating and "melting," but disappearing as well. I am suggesting, as a few recent writers have, that a new reality is emerging, as well as an expansion of the use of the term ethnic group, from minority and marginal subgroups on society's fringes to major societal elements. The new term that has emerged is ethnicity.

One of the striking characteristics of modern societies is that self-interest is so effectively pursued by ethnic groups today that ethnic groups may be called self-interest groups (Glazer & Moynihan, 1976). It appears that the former narrow emphasis on culture, language, and religion has shifted to an emphasis on self-interest as defined by members of the group. Thus, although the emphasis of the ethnic group may have changed, the emotional significance of attachment and belongingness to the ethnic group seems to have persisted and grown. The efficacy of utilizing this new emphasis on ethnicity for asserting claims and making demands against governmental and societal decision makers and power brokers is intricately related to the standard practice in which ethnic categories are employed as the primary basis for the distribution and allocation of resources, rewards, status, and power.

The process of absorption and Americanization is an important indoctrinating and socializing technique. Immigrants to the United States have become more "American" and less ethnic over time. Conversely, however, in the process of Americanization they have simultaneously become more ethnic. There is legitimacy to the finding that forms of identification based on religion, language, and national origin have something in common. The commonality is that such descriptors are now effective foci for group mobilization, and for group self-interest on the basis of one's ethnicity (Hechter, 1974). One has only to look at the experience of blacks in the United States and their demands for civil rights and their quest for economic, social, political, and educational opportunity. It is of more than momentary significance that the organization and demands made by blacks struck responsive chords among other ethnic groups in the United States as well--Puerto Ricans, Mexican Americans, American Indians, Orientals, and eventually white non-Hispanic ethnic groups.

According to Glazer and Moynihan (1976), there are two related reasons that may account for the degree to which ethnic conflicts appear to have become the form in which interest conflicts are pursued. The first has to do with the efficacy of ethnicity in making legitimate claims on society's resources; the second has to do with the underlying social dynamics that lead to such claims. The latter concern confronts the fact and nature of inequality. In American capitalist society people are not equal, nor are the ethnic groups to which they belong. Altogether different is the proposition that all individuals should be equal and that all ethnic groups should be equal. If one is to describe American society, one describes people ranked everywhere in systems of social stratification where one individual fares better than another. That this is empirical fact is beyond question. As with individuals, so too are groups of individuals defined by their ethnic identity. Dahrendorf's (1969) thesis as to the origins of inequality suggests that inequality arises from differential power and success in achieving social norms and social rewards. His thesis is equally applicable to group inequality. In a situation of racially mixed ethnic groups where one group is dominant, there follows almost an automatic consignment of other groups to inferior status.

Herein lies the dynamic element in the system. Dahrendorf wrote that inequality breeds its own dynamism in that it implies the gain of one group at the expense of another. Systems of social stratification therefore generate protest against their own principles and bear the seeds of their own suppression (Dahrendorf, 1969; van den Berghe, 1967). The assertion is not that all systems of social stratification generate internal protest, but that there are several examples on a national and international scene that bear witness to this thesis. One has only to look at Nicaragua, Zimbabwe, Iran, South Africa, Cuba, India, and even the United States to note some rather vivid examples.

Theoretical Perspective

From the vantage point of most contemporary social scientists, with the problems of stagflation,[1] schooling, segregated housing, health, and unemployment becoming increasingly acute, the prospect is that the inequalities between America's white ethnic majority and her ethnic and racial minorities will continue to widen. The problems of majority-minority relations, far from being resolved, remain as entrenched and potentially volatile as ever before.

This study of ethnic group relations will primarily focus upon types and patterns of differential power and intergroup conflict and stress in the United States on a systemic or social-systems level. This is not to suggest that there is little practical or theoretical utility in understanding the social psychological dynamics (i.e., individual prejudice) between a society's majority and minority groups. However, I question the relevance of such an analysis that is not complemented by a thorough understanding of the systemic institutional and structural variables that support, perpetuate, and advance the social psychological dynamics that take place on an individual level.

For clarification purposes, prejudice is defined as an attitude that predisposes a person to act, think, and feel in a way that is favorable or unfavorable toward a group or its individual members (Secord & Blackman, 1964). Prejudice refers to attitudes; discrimination refers to behavior. Discrimination implies the "unequal treatment of equals" (Yinger, 1968, p. 449). Although discrimination may certainly emanate from personal prejudice, it also results from the conformity of individuals to the normative dictates of a racially biased society.

In the voluminous research data compiled over the past century-and-a-half on ethnicity and majority-minority group relations in American society, there is a conspicuous oversight. It appears that the conventional wisdom of the sociologists either totally dismissed or paid little heed to such highly relevant variables as power, conflict, politics, and the institutional and structural processes that impinge upon ethnic group relations. In fact, the literature reveals that an emphasis upon power, politics, and institutional variables is a rather recent occurrence.

It is my intention to depart from such conventional wisdom, and as my expressed interest in power, stress, and conflict suggests, emphasis will be placed upon sociopolitical explanations of the dynamics of majority-minority ethnic relations. Utilizing a social systems framework, this perspective suggests that the fundamental determinants of majority-minority ethnic group relations and conflicts are to be found in the operational institutional structures of a society. Such structures must be seen as normative extensions of a society's values, traditions, mores, and conventions.

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[1] Stagflation is a term coined by economists to denote a period of recession occurring in a period of inflation.

Some sociologists have labeled this perspective "the conflict framework," wherein interacting groups are oriented toward the attainment of mutually exclusive goals. The pursuit of incompatible goals necessarily means that one group's gain is another group's loss. Needless to say, this creates an interest in change, which, although latent for a time (especially following the resolution of a specific conflict), will become manifest under certain circumstances, to stimulate conflict anew. It is important to note here that persistent interest in and attempts to bring about change are insufficient to engender or guarantee change at any point in time.

It is the pervasive racial and ethnic inequality in America's social order, with its concomitant system of social class stratification, that creates the potency and force for ethnic intergroup conflict. For, as the researchers have noted, systems of rigid stratification marked with blatant inequality generate protest against their own principles and sow the seeds for their own revolution (Dahrendorf, 1969; van den Berghe, 1967). Indeed, this viewpoint has ancient roots, but its modern impetus was provided by the Marxian emphasis and the inevitability of the clash of groups with divergent interests (Cox, 1948). Although Marx emphasized economic class and economic exploitation as the primary units of conflict, on the American scene conflict has been equally structured along racial and ethnic group lines. Recent evidence obtained by contemporary researchers has shown that the root for exploitation of racial and ethnic minorities lies in a system of economic power and privilege in which not only race and ethnicity, but sex, age, family background, and other ascriptive variables have a stratifying and mutually reinforcing effect (Bowles & Gintis, 1976; Carnoy, 1974, 1975; Baran & Sweezy, 1970; Reich, 1978). Racism, therefore, on both an institutional and an individual level, is a key mechanism for the stabilization of capitalism and the reproduction and legitimization of inequality.

Racism is defined here as "the prediction of decisions and policies on considerations of race for the purpose of subordinating a racial group and maintaining control over that group" (Carmichael & Hamilton, 1967, p. 3). Operating on both a covert and an overt level, it takes two related forms. The first is on an individual level. The second is on an institutional level where racism as a normative, societal ideology operates within and among the organizations, institutions, and processes of the larger society. And the overt acts of individual racism and the more covert acts of institutional racism have a mutually reinforcing effect.

Although the theoretical perspective presented here may appear quite logical and rational, again it is a radical departure from the extensive research compiled on racial and ethnic relations. A far too meager amount of research is devoted to the attributes of the majority group and the institutional mechanisms by which majority and minority relations are created, sustained, and changed. Research by Bierstedt (1948) is a notable exception. He stated:

> It is the majority . . . which sets the culture pattern and sustains it, which is in fact responsible for whatever pattern or configuration there is in a culture. It is the majority which confers upon folkways, mores, customs, and laws the status of norms and gives them coercive power. It is the majority which guarantees the stability of a society. It is the majority which requires conformity to custom and which penalizes deviation--except in ways in which the majority sanctions and approves. It is the majority which is the custodian of the mores and which defends them against innovation. And it is the inertia of majorities, finally, which retards the processes of change. (p. 709)

Of paramount importance in this study is the manner in which societal institutions are controlled by dominant majority groups rather than by a sole concentration of minority ethnic group characteristics. Ethnicity as a form of human diversity would be less of a problem in America were it not for institutional norms sustained and perpetuated by a dominant society that assigns differential rewards on the basis of that diversity.

A misrendering and misinterpretation of the significance of societal patterns of power, influence, and control have often caused social issues or social problems to be defined as a deviation or departure from societal norms. Far too seldom are a society's institutional processes the object of systematic inquiry (Horton, 1966).

Proponents of American democratic ideology have professed altruistically that societal institutions and organizations exist to serve people. In keeping with this view, institutions should therefore be held answerable and accountable to the people whose lives they affect. Where and if an institution exists and persists in discordance and conflict with human needs, and impoverishment and disadvantagement result, democratic ideology affirms that it ought be changed. However, the dominant American philosophy holds that in case of conflict or maladjustment between individuals and the system, it is the individual(s) who must be changed and be made less of a problem.

Recent examples in our society give credence to this point. When problems are acknowledged by the dominant group in American society, they are ascribed to characteristics of the subordinate group rather than to the operative processes in the social system. One has only to remember Myrdal's (1944) discussion of black-white relations in America as "the Negro problem." Similarly, this notion is implicit in the many discussions of cultural deprivation. Academic failure, underachievement, and high drop-out rates are supposedly ascribed to the deficiencies and internal (even intellectual) instabilities and inadequacies of the minority group. Until recently little mention was made in the literature of the natural role and functioning of schools and their relationship to larger institutional alignments in our society (Baratz & Baratz, 1970; Bowles & Gintis, 1976; Ryan, 1976). The result was that emphasis was placed upon ethnic and racial minority groups as a means of deflecting scrutiny away from causative institutional variables.

What are the mechanisms by which inequalities, once established, are maintained and perpetuated? Discrimination, or the differential treatment accorded racial and ethnic minority group members, is the means by which the unequal status of the minority group and the disproportionate power of the majority group are preserved (Yetman, 1975). Discrimination has several forms, but for the ensuing discussion the distinction is made between attitudinal discrimination, which refers to discriminatory practices attributable to or influenced by individual prejudice, and institutional or systemic discrimination. The latter is less attributable to individual prejudice, yet more attributable to society's normal functioning. Institutional discrimination involves policies or practices that appear to be nonpartisan in their effect on minority individuals or groups but that have the effect of a disproportionate and detrimental impact upon such groups.

According to Yinger (1968), discrimination refers to "the persistent application of criteria that are arbitrary, irrelevant, or unfair by dominant standards, with the result that some persons receive an undue advantage and others, although equally qualified, suffer an unjustified penalty" (p. 449). One would assume, therefore, that if all majority-group members would individually eliminate or cease to subscribe to prejudicial attitudes, discrimination, by definition, would cease to exist. However, if prejudice and individual and adaptive forms of discrimination and racism that emanate from it were eliminated overnight, the inequalities grounded in the normal impersonal functioning of existing institutional structures would remain (Yetman, 1975).

Friedman (1969) has characterized institutional (systemic) discrimination and racism in the following manner:

> . . . a pattern of action in which one or more of the institutions or organizations of society has the power to throw on more burdens and give less benefits to the members of one race than another on an ongoing basis, or in so doing support another institution or organization, and use their power in this manner. This means . . . that decisions are made, agendas structured, issues defined, beliefs, values, and attitudes promulgated and enshrined, commitments entered into, and/or resources allocated, in such a way that nonwhites are systematically deprived or exploited. It should be emphasized that under this definition the intentions of the actors, or the formal statements of the relevant norms, laws, and values, are irrelevant. . . . What counts is whether its actions in fact distribute burdens and rewards in a racially biased fashion. . . . (p. 19)

Important in terms of this discussion is the interrelated and cumulative nature of systemic or institutional discrimination and racism, whereby society's institutions are not only mutually aligned, but are sustaining and reinforcing as well. On a social systems level the various manifestations of institutional discrimination and racism appear to be distinct, but on an operational level they are indistinguishable. The resource allocation of city schools; residential segregation and housing quality; the location, structure, and placement of transportation systems; hiring and promotion practices; academic underachievement of racial and ethnic minority youth; availability of decent health care; behavior of policemen and judges; a legal order that incarcerates more minorities than majorities; stereotypical images prevalent in the media and school curricula; price gouging in ghetto stores; morbidity, mortality, and longevity rates; lack of political clout and effective legislative representation--these and a myriad of other forms of social, political, and economic discrimination concurrently interlock to determine the status, welfare, and income of the racial and ethnic minorities of color. Such factors cannot be considered inconsequential to one's social mobility in the economic arena, for such processes are not simply additive, but again, are mutually sustaining and reinforcing (Reich, 1978). Noneconomic factors neatly interlace with economic factors and become, on a systems level, operationally inseparable. It is these factors, therefore, that serve to lock the racial and ethnic minorities of color into a permanent condition of poverty and inequality.

The Majority and the Minority

Although originally borrowed from the European experience, the term minority group, particularly after the rise of nationalism in the late eighteenth and early nineteenth centuries, was used to characterize racial and ethnic groups that had become subordinate to another racial or ethnic group through the imposition of, or shifts in, political power or boundaries. Joseph B. Gittler's definition suggests that "minority groups are those whose members experience a wide range of discriminatory treatment and frequently are relegated to positions relatively low in the status structure of a society" (Gittler, 1956, p. vii). In this definition elements of the term's original meaning have been retained--the reference to a distinct group that occupies a subordinate position of prestige, privilege, and power. Wagley and Harris (1958, pp. 1-9) defined minority groups as:

1. suffering discrimination and subordination within a society;
2. set apart in terms of physical or cultural traits disapproved of by the dominant group;
3. which are units with a sense of collective identity and common burdens;
4. whose membership is determined by the socially invented rule of descent; and
5. characterized by marriage within the group.

Perhaps the most comprehensive description of minority groups is that given by Dworkin and Dworkin (1976), who suggested that minority groups are characterized by the following traits: identifiability, differential power, differential and pejorative treatment, and group awareness. The relationship among these four characteristics is processive and variable at any given point in time. Although skin color is a primary element of identifiability, with black Americans being the principal outcasts, other distinguishing traits that are perhaps more vacillatory and less constant than biological traits include dress, religion, and speech, among other cultural variables. For certain immigrant populations it has been possible to change their relative status by adopting the traditions and culture of the dominant majority and thereby becoming less distinguishable.

Historical research reveals that within a few generations the immigrant minorities from northern and western Europe (the British Isles, Germany, France, Ireland, Scandinavia, Belgium, and the Netherlands) became Americanized, blended, and acculturated into the majority population. When distinctive biological factors such as skin color are involved, such blending is no easy process. And in those societies where there is much physical homogeneity, distinct cultural traits are of crucial significance because institutional and societal norms are created to ensure that such distinctions are made manifest (Dworkin & Dworkin, 1976). Such a situation was evident in Nazi Germany, where it became Nazi policy to force Jews to wear yellow arm bands not only to adduce one's identification but also to ensure differential treatment.

Blalock (1960, 1967) described actual rather than potential power as the use of resources to control and manipulate others. Blalock's power equation includes total resources (prestige, authority, property, money, and natural resources) in addition to the mobilization of resources (the total resources employed). Dworkin and Dworkin's (1976) use of the term differential power, by implication, infers a greater use of resources among two competing groups--of a relatively more powerful group versus a relatively less powerful group.

The use of the terms majority group and minority group goes beyond mere numerical enumeration. For the purposes of this paper, power differentiation is the major distinctive feature of majority-minority group relations. The distinction is made between a power group (irrespective of size) and a numerical majority (dependent only upon size), for in terms of control and domination it is power rather than numbers that is of consequence.

Blalock further argued that the size of the group, rather than an asset, may become a liability and drain group strength, thus posing problems of coordination and the apportionment of resources. To be sure, there have been power groups that are numerically larger in size, but there are many contemporary examples of dominant power groups being numerically small. Ruling power structures in stratified societies such as the United States, South Africa, and Zimbabwe illustrate the contention that a numerically small group may control a numerically larger but relatively powerless group.

Many different dimensions (i.e., race, ethnicity, religion, and language) may be used to distinguish majority from minority; however, according to Noel (1968), such differences alone do not automatically generate tension and conflict and create a system of ethnic inequality. Historically speaking, racial, cultural, and religious groups have coexisted without systems of ethnic inequality and conflict. By definition, minority groups are subordinate groups, but majority-minority relations occur when one group prevails by imposing its will upon another. Once the differences are perceived, whether cultural or biological in origin, perhaps the most important factor is the differential power of one group relative to the other (Noel, 1968).

What follows is a system of ethnic stratification wherein some fixed and ascribed group membership (i.e., race, religion, culture, language) is used as the major criterion for the assignment of social standing and prestige with concomitant differential rewards.

Preeminent power is necessary not only for the establishment of a system of racial and ethnic stratification, but also for its maintenance and perpetuation (Noel, 1968). Having obtained control of a society's institutions, the majority group generally strives to solidify and consolidate its position. The process by which this occurred in the United States was summarized by Graham and Gurr (1969) as follows:

> . . . we are a nation of immigrants, but one in which the original dominant immigrant group, the so-called Anglo-Saxons, effectively preempted the crucial levers of economic and political power in government, commerce and the professions. This elite group has tenaciously resisted the upward strivings of successive "ethnic" immigrant waves. The resultant competitive hierarchy of immigrants has always been highly conducive to violence, but this violence has taken different forms. The Anglo-Americans have used their access to the levers of power to maintain their dominance, using legal force surrounded by an aura of legitimacy for such ends as economic exploitation; the restriction of immigration by a national-origin quota system which clearly branded later immigrants as culturally undesirable; the confinement of the original Indian immigrants largely to a barren reservation; and the restriction of blacks to a degraded caste. (p. 794)

Significant differences in power permit the dominant majority to exercise control over the minority through differential, pejorative, and discriminatory treatment and action. Lieberson (1961), Allport (1954), and Dworkin and Dworkin (1976) examined the processes by which majorities maintain dominance over ethnic minorities. Dworkin and Dworkin's (1976, pp. 39-41) assessment, which includes six processes or strategies, is particularly astute and timely.

1. Tokenism. By acceding to the minimal demands of ethnic minorities, majorities give the mistaken impression of granting sweeping changes without actually doing so. Nowhere is this more evident than in the struggle for school desegregation, where a few ethnic minorities have been permitted to attend majority group schools. As a result, majorities have attempted to meet school desegregation orders without changing the balance of power, or without equalizing the resources of the educational and economic opportunity structure. Hence the need for the distinction between such terms as desegregation and integration. This situation is analogous to that exercised by employers who hire one or two ethnic minority group members, assign them executive titles, yet provide limited opportunites for those minorities to exercise decision-making.

2. Coercion occurs when ethnic minorities are forced to comply either with intimidation or the threat of violence, loss of job security, arrest, etc. Co-optation occurs when minorities are incorporated into the majority group to serve as buffers and avert threats to majority controls. The real task of co-opted individuals is to control and suppress the activities of other members of their own ethnic minority group.

3. Gerrymandering is the redistribution of voting districts so that ethnic minorities will lack a voting plurality in their district. The effect is a dilution of ethnic minority political power.

4. Divide and conquer occurs when minority group members place minorities in opposition to one another, primarily by promoting economic competition between groups (Bonacich, 1972).

5. Socialization and Anglo conformity is an attempt to indoctrinate the minority with the language, beliefs, values, and customs of the majority. The result is less an identification with one's ethnic minority heritage and more an identification with majority normative standards. Inherent in such processes is the legitimization and acceptance of majority control. Because socialization and conformity take place on an individual level, the effect is that an ethnic minority individual becomes independent and individualistic, as opposed to group-oriented. Subsequent achievements help the individual rather than the ethnic minority group to which he or she belongs.

Dworkin and Dworkin's (1976) final characteristic is group awareness, which refers to the perception of common aims and objectives that are accomplished through cooperation and communal kinship, as opposed to individual competition. It is this group awareness and belongingness on the basis of the self-interest of the group to which the term new ethnicity is applied.

Major Conceptual Frameworks

This section presents a general frame of reference designed to classify some of the major theoretical perspectives that sociologists have used to study racial and ethnic relations and behaviors. It is beyond the scope of this paper to present an exhaustive critique of each framework, for entire volumes have been devoted to such purposes. Rather, the intent is to provide a summary of the major conceptual models. Few theories can account for a wide range of complex intervening variables. Suffice it to say, therefore, that the constructs discussed on the ensuing pages have inherent weaknesses that are the subject of ongoing research. One will note that there are marked similarities, almost a cross-fertilization, among the theories irrespective of the fact that they belong to distinct conceptual groupings.

The first grouping of theories examined is the race-cycle, consensus, interdependence, and conflict frameworks. While the race-cycle framework is an evolutionary model of society, the consensus, interdependence, and conflict frameworks are applicable to a wide range of behavior and ensue from major frames employed in contemporary sociology--structural functionalism, symbolic interactionism, and conflict.

The Race-Cycle Framework

Initially developed by R. E. Park (1950), the race-cycle framework asserts a unilinear evolvement of race relations inconsistent with their development in modern societies. Park (1950) observed that:

> In the relations of races there is a cycle of events which tends everywhere to repeat itself . . . the race relations cycle which takes the form, to state it abstractly, of contact, competition, accommodation, and eventual assimilation, is apparently progressive and irreversible. Customs, regulations, immigration restrictions and racial barriers may slacken the tempo of the movement; may perhaps halt it altogether for a time; but cannot change its direction; cannot at any rate reverse it. . . . (p. 150)

There have been subsequent modifications of Park's original thesis that attempt to correct its apparent deficiencies. This approach is adequate to explain the emergence of the pattern of ethnic differentiation that follows initial contact, but there have been several examples in ethnic relations in the United States where an initial ethnic group contact has been terminated short of assimilation and amalgamation. One has only to make a cursory analysis of the experience of American Indians and black Americans to see the flaws in this theory (Palmer, 1966).

In response to Park, Barth and Noel (1972) listed five theoretically possible outcomes of interethnic contact, as follows:

1. exclusion, embodying both expulsion and annihilation;

2. symbiosis, relationship with an equally beneficial exchange between group members of different sociopolitical systems;

3. ethnic stratification, involving classification and subordination within a single political system;

4. pluralism, equalitarian integration of distinct ethnic groups within a common social, political, and economic system; and

5. assimilation, the social-psychological, biological, and cultural mixture of distinct groups resulting in an ethnically indistinct society.

Several researchers have elaborated and embellished Park's original thesis, notably Brown (1934), Lieberson (1961), and Noel (1968). Taking into consideration the five possible outcomes of intergroup contact, it becomes necessary to specify the conditions under which any outcome is likely. Barth and Noel (1972) have outlined three variables that determine the initial outcome. They are the characteristics of the migration and the migrants, the nature and context of initial contacts, and the cultural and social-structural characteristics of the groups prior to contact. Noel (1968) posited the theory that competition provides the motivating force for stratification; that ethnocentrism directs the competition along racial and ethnic group lines; and that the relative power determines which group will have the potential to subordinate the other. Furthermore, if the power differential among either group is small, or if the degree of ethnocentrism or competition is moderate, an equalitarian outcome is probable. On the other hand, a significant amount of all three increases the probability of a highly disparate and inequalitarian outcome.

The Consensus Framework

According to Parsons (1954) the consensus perspective " . . . is a condition of the stability of social systems that there should be an integration of the component units to constitute a 'common value system'" (p. 388). This viewpoint postulates a marked degree of unanimity within and between all segments of society as an important variable in the continuance and persistence of a social structure. This frame of reference is rooted in the structural-functional and the symbolic-interactionist models of society.

The structural-functional orientation is exemplified in the assumptions about the nature of man and society upon which the framework's explanation of structural persistence is based. Sociologists of the consensus persuasion stress the fact that societal structural elements and subsystems are mutually dependent and that society's well-being requires the mutual cooperation of such elements and subsystems. Stratification, presumably, is thought to be compatible with the requisites of the society's component parts.

The model of symbolic interactionism assumes that social behavior is not only purposive and organized, but goal-oriented, and that cooperative goal-directed behavior requires shared symbols. Thus men do not interact by reacting to another's actions per se, but rather they interpret and define each other's actions (Blumer, 1962). What Blumer suggested is that the definition of the situation provides the frame of reference for social interaction. According to Shibutani and Kwan (1965), "What is of decisive importance is that human beings interact not so much in terms of what they actually are but in terms of the conceptions that they form of themselves and one another" (p. 38). It would appear, therefore, that an individual is not assigned to a specific ethnic group because he shares certain observable characteristics with group members, but because there is a general consensus that he belongs to the group regardless of any real physical or cultural similarities (Barth & Noel, 1972). Because societies are not perfect systems, the value-consensus model with its attendant structural compatibility can only be approximated, at best, in any society.

The Interdependence Framework

In most societies various component units are both interrelated and interdependent upon one another, and as societies urbanize and become more complex, such a network of interdependency becomes increasingly extensive. The result is a forced cooperation and accommodation among subgroups and subsystems, regardless of consensus or dissensus, in order that each may achieve a set of goals that they are incapable of achieving alone. In more urban societies, interdependence is highly related to the maintenance of order wherein order subsumes stability and change.

Adaptation that overlaps stability and change requires, on the part of social systems, a receptivity to modifications assuring that such systems will not be destroyed by their own intransigence and rigidity in the face of internal contradictions (Coser, 1956). In essence the preservation of order is not equivalent to the preservation of the status quo. Inversely, adaptation requires that only a few structures (the less essential ones) be permitted to vary at any given moment and these at rates not exceeding prior restricted limits (Olsen, 1968). Thus, "it is not minimal change but the minimization of change which defines adaptation. . . . the difference between adaptation and stability inheres in the fact of system modification; that between adaptation and change inheres in function--the former maintains an existent order while the latter creates a new order" (Barth & Noel, 1972 p. 341).

The significance of interdependence for adaptation is twofold (Barth & Noel, 1972):

1. It creates a social system awareness of pressure for change affecting any aspect of the system.

2. It imposes sanctions to curtail and eliminate such pressures.

Olsen (1968) suggested that if pressures for change are internal, interdependence requires mandatory sanctions because the element seeking change is dependent upon other elements (Olsen, 1968). When external pressure threatens, the entire system makes an adaptive response because all of the societal elements are interrelated.

Technological, demographic, and a myriad of other changes may alter the degree of interdependence (Shibutani & Kwan, 1965). The social system is so adaptive that any conditions effecting a slight modification in the balance of power will cause an institutionalization of that modification that will not alter the existing system of stratification and inequality. One has only to remember the disruption of the social order by blacks during the Civil Rights Movement and the resulting token changes that occurred in the practices of schools, universities, labor unions, political parties, and the like. The introduction of black and ethnic studies curricula, open admissions programs, blacks in governmental posts, the removal of discriminatory clauses from union constitutions, and the desegregation of previously all white schools have rarely had any effect on actual racial practices. Such astute alternations are adaptive and even represent concessions; however, such meager concessions simply function to maintain the present order of the social system and serve to forestall more sweeping changes.

Despite a system's adaptability, radical social and structural change can occur in all social systems. Although this theory is in many ways profound, it remains for an adequate theory of ethnic differentiation to account for major changes in patterns of ethnic relationships.

The Conflict Framework

The conflict framework is an overarching unbrella-type frame of reference that is inclusive of several theoretical constructs that, although varied, posit the primacy of conflict as a salient and pervasive constant. Certain theories under this framework have been elaborated upon in the section devoted to theoretical perspective. In addition, two cardinal points should be mentioned. The first is that vested interests, power, inequality, and coercion are key propositions of the conflict school. Second, little significant change will result from conflict without a basic realignment and alteration in the balance of power between competing groups.

Split labor market theory. There are two major theoretical constructs under this framework that bear discussion. First is the new conflict theory that combines economic competition and exploitation in one framework. Bonacich's (1972) split labor market theory of ethnic antagonisms occurs when two groups with differing levels of skills and expertise are in conflict with one another in the labor market. The theory suggests that employers, in order to minimize costs, replace and substitute higher-paid labor with lower-paid labor. The result is the increase of antagonism between the two groups, which more often than not are majority and minority groups. The majority employs two discriminatory practices: labor caste systems with the consignment of minorities to low-status jobs, and exclusion, whereby the minority may be removed or transferred. As one can see, this theory borrows from the aforementioned conflict theories as well as from the caste and class models, which are discussed next.

Caste and class theories. The United States has been alternately described as having a class system for mobility in terms of power, prestige, and property or as having a rigid color-caste system. It was during the 1930s when W. Lloyd Warner and Allison Davis offered the caste framework in which black-white relations were seen as a color-caste system that framed social, economic, and political relations in American society (Warner & Davis, 1939; Dollard, 1937; Davis, Gardner, & Gardner, 1941). Such a system was reinforced constitutionally by the legal order (Drake, 1966). Since the original Warner-Davis thesis, the color-caste analysis has been extended to certain other racial and ethnic minority groups, i.e., Puerto Ricans, Mexican Americans, and American Indians (Ogbu, 1978). However, researchers have seriously challenged the caste model, arguing that such a model is inextricably tied to the religious system of India and is therefore analytically inapplicable to the United States experience (Blauner, 1969, 1972; Carmichael & Hamilton, 1967; Cox, 1948; Simpson & Yinger, 1958).

Class models have also proliferated in American sociology. Some researchers have analyzed social classes as groups with distinct boundaries delineating upper, middle, and lower groups (Hollingshead, 1949; Warner, et al., 1960), but others have suggested that social classes are indistinct without clear-cut boundaries (Cox, 1948; Cuber & Kenkel, 1954; Myrdal, 1944). The models have tended to deal specifically with blacks and whites, with two parallel class structures, one for blacks and one for whites (Burgess, 1962; Drake & Cayton, 1945; Hunter, 1953). Class theory suggests that one is born into a certain social-class standing or rank (either upper, middle, or lower), and that it is one's social-class ranking that will ultimately determine one's opportunity structure and one's facility in moving up the social-class ladder. It is popularized (and some would say mythologized) that all persons in America have an equal opportunity to acquire and to achieve. It is schooling that is perceived, by some, as the effective vehicle for social-class mobility. Although a topic of intense debate, there are those who maintain that the assignment of role and status is based solely upon one's academic achievement.

Class systems, however, are somewhat immutable and rigid. As a result of institutionalized ascription processes and the differential assignment of prestige, status, and reward based on one's race, sex, ethnicity, social-class standing, etc., it becomes irrefutable that class stratification systems are pervasively self-sustaining and self-perpetuating. Thus elites tend to beget elites, and paupers tend to beget paupers. (This process and exceptions to it will be examined with greater detail in the section devoted to ethnicity and schooling.)

Several researchers writing chiefly about the experiences of blacks, Puerto Ricans, Mexican Americans, and American Indians have rejected both the caste and class models and have suggested the appropriateness of an internal colonial model (Blauner, 1972; Carmichael & Hamilton, 1967; Cruse, 1968; Memmi, 1967; Moore, 1970). The relationship between the minority and the majority is likened to that of the colonized and the colonizer. The colonized provide the raw materials or cheap labor and in return purchase the finished product at exorbitant rates.

A quite different model termed ethclass was proposed by Gordon (1964). This model asserts that groups of the same social class, irrespective of ethnicity, share more values and beliefs than do different social classes within a particular ethnic group. Gordon's assumption is that there are greater commonalities than differences upon which to develop intergroup harmony and cooperation.

Social Psychological Constructs

In keeping with the stated theoretical perspective of this chapter, one would err in totally dismissing the social psychological dimension, the attitudinal dimension (prejudice), and its role in ethnicity and ethnic intergroup relations. As was stated earlier, the social psychological dimension plays an important function; however, debate appears to be centered upon the primacy of this dimension relative to causative systemic organizational and institutional variables. From this author's perspective, the social psychological dynamics cannot be assessed apart from the institutional and societal conditions that generate them (Schermerhorn, 1970).

Essential to the social psychological dimension of ethnic group relations are the elements of attitudes and behavior. Generally speaking, attitudes may be defined as interrelated propositions or ideas that predispose an individual to behave in a manner consistent with those beliefs. Behaviors are observable acts. Although attitudes are not directly discernible, they may be inferred from behavior. Such inferences may be used to predict future behaviors. In the study of ethnic diversity and intergroup contact, concern is with prejudicial attitudes and discriminatory behavior.

Prejudice

Horowitz (1936) observed that prejudicial attitudes may be formed without previous contact with the target group. That is, individuals may learn their negative prejudiced attitudes about racial and ethnic minorities through association with others who hold such beliefs.

Katz (1960) asserted that prejudice serves four functions by:

1. providing preknowledge of what to expect in a given situation;
2. protecting the ego or self-esteem of the host individual;
3. maintaining patterns of subjugation and superordination for social, economic, and political gain; and
4. permitting the host individual to release and voice his personal values.

Because racism and prejudice are normative integral parts of the American ethic, Westie (1965) argued that such attitudes permit an individual to express central societal values. Similarly, Dworkin and Dworkin (1976) suggested two prevalent norms in contemporary American society: "Thou shalt not be prejudiced," and (following the Civil Rights Movement) "Thou shalt not be caught at it" (p. 72).

Pertinent to prejudicial attitudes is the related factor of ethnocentrism or the proclivity and inclination to use one's own racial or ethnic group as a proper referent upon which to evaluate others. The extent to which the target group is physically or culturally distinct only heightens the negative stereotypical assessment of them. Underlying ethnocentrism is the related concept of xenophobia, or fear and abhorrence of those who are different. Prejudice, ethnocentrism, and xenophobia are all attitudinal phenomena with an intense emotional component. Rokeach, Smith, and Evans (1960) proposed that certain racial and ethnic minorities (blacks, Puerto Ricans, Mexican Americans, American Indians) are disdained and castigated not because of physical and cultural distinctions, but because they are prejudged to hold conflicting and inimical values and beliefs to those of the dominant majority. It is of utmost importance that prejudice on an individual level serves as a justification for the status quo and a means to negatively rationalize the racial or ethnic diversity of the minority group.

Stereotypes

Walter Lippmann (1922) advanced the term stereotype, yet Allport (1954) provided the best definition--as exaggerated or distorted beliefs associated with a group or category that serve to rationalize and justify one's conduct toward the target group.

There are two distinct processes in stereotypical behavior. Merton (1957) described the first as "ingroup virtues and outgroup vices," whereby similar, if not identical, behavior by minority group members and majority group members is ascribable to conflicting motivation. Dworkin and Dworkin (1976) provided the example of the wealthy woman who complained that her gardener, who was black and elderly, refused to carry out the heavy trash cans to the curb as he had twenty years ago. Her contention as to the reason why he no longer did this chore was that he must be a black militant, one of those black power advocates. Upon being asked why her husband, who was of the same age as the gardener, did not carry out the trash cans, her retort was, "He's gotten too old to do that kind of heavy work" (p. 75).

Thomas and Znaniecki (1927) identified the "Thomas theorem," the popular reference known as "the self-fulfilling prophecy," as the second process in stereotyping. Accordingly, if men define situations as real, they will be real in their consequences (p. 75). Defining racial and ethnic groups in terms of set stereotypes elicits behavior toward the group based upon such stereotypes. And, over time, the ethnic group's behavior conforms to the stereotype. Research compiled by Liebow (1967) reported that blacks were expected by their employers to steal on their jobs and therefore were paid far less than white employees. Because wages were so low, a black was faced either with stealing (reinforcing the stereotype) or with taking home little pay to support his family.

Theories of Prejudice

There are three major theoretical explanations for the causes of prejudice and discrimination: psychological theories, social structural theories, and normative/cultural theories.

Psychological Theories

Dollard et al. (1939) developed the premise that maintains that aggressive impulses emerge whenever one is frustrated. Prejudice has been termed a type of aggression as a response to frustration. When an individual's needs are unsatisfied, the individual often responds with aggression. If the aggression cannot be channelled toward the frustrating object (which may be too powerful), aggression is directed toward members of racial and ethnic minority groups who serve as scapegoats. Take, for example, poor whites who cannot vent their frustrations toward the institutional mechanisms that oppress them (e.g., their workplace), for obvious reasons. Displacement of their aggression, therefore, is upon easily identifiable objects--blacks, American Indians, Puerto Ricans, Mexican Americans. Although there are many examples that support this theory, there are two major weaknesses. The theory fails to explain why aggression is directed toward one racial or ethnic minority group as opposed to another. In addition, the theory does not account for other responses to frustration separate from the racial and ethnic scapegoating theory (Dworkin & Dworkin, 1976).

Horkheimer (1946) proposed that prejudice could be attributed to a general personality type, the authoritarian personality. Flowerman (1950) noted the following characteristics:

1. He is a supreme conformist who irrationally and unquestioningly succumbs to the commands of a leader.
2. He views the world as menacing and unfriendly, agreeing that the "world is a jungle."
3. He is mechanical and rigid, showing little imagination.
4. He is quite ethnocentric and xenophobic. Because the world is menacing, he can find security only with those who are like him and hence predictable.
5. He is a phony conservative, waving the flag but hating the values of freedom and democracy.
6. He is a moral purist, who has come to reject all emotionality and sensuality.

Social Structural Theories

Bear in mind that many of the conflict theories previously noted are based, in part, on theories of individual prejudice and discrimination on an individual and a mass societal scale. Therefore, there are those who include selected conflict theories under the social structure rubric.

Another body of theory under the social structural framework is the situational and mass society grouping (Mannheim, 1940; Mills, 1959; Olson, 1963; Shils, 1961; Westie, 1964). Theorists of this persuasion suggest that prejudice and discrimination are situation specific. Individuals may exhibit discriminatory behavior in one situation and behave the exact opposite in another. Similarly, individuals participate in organizations that have contradictory goals. Because the individual exerts less influence over the organization than the organization exerts over the individual, one's attitudes and behavior must conform to the dictates of the organization, rather than to one's personal beliefs. In the light of this view, Westie (1965) suggested that individuals tolerate a high degree of contradictory, if not hypocritical, behavior and attitudes within themselves.

Normative and Cultural Theory

Previous mention was made of the collaborative and reciprocal relationship between institutional racism, as a societal phenomenon, and individual racism (or prejudice). Westie (1965) argued that people are prejudiced because society not only teaches them to be so, but rewards and demands such belief and behavior as a form of compliance with prevailing norms and standards. Thus individuals are not born with prejudice; they are simply socialized and acculturated into it.

Under the normative and cultural rubric is the linguistic theory of prejudice based upon the Sapir-Whorf hypothesis that asserts that the characteristics of a language determine how its speakers view their world (Sapir, 1912; Whorf, 1941). Similarly, Fishman (1960) held that language is far more than a vehicle of communication, but represents how man has structured and organized the world. If one assumes that culture defines the appropriate mode of behavior, then associating with and relating to others is transmitted through language. The content of language, therefore, has been considered a source of prejudice and discrimination. For example, black as a color has rather ominous and sinister connotations--harmful or evil magic is called black magic, funerals and death are black, witches are black. Terms like *blackening*, *blackballing*, *blacklisting*, *black-marketing*, and *blackmailing* refer to illicit, evil misdeeds, or wrongoing that is satanic in origin. Conversely, angels are white, and Ivory soap is not only white, but 99 and 44/100 percent pure! Thus the color white not only denotes innocence and cleanliness, but angels and celestial bodies as well. Such connotations do not serve as mere abstractions, but are effectively used to stereotype and negatively rationalize skin color as a distinct physical and biological trait among America's black populace. The popular slogan, "Black is beautiful," has served to diminish such humiliating stereotypes.

The words *black* and *white* are not the only colors used to perpetuate prejudicial attitudes and stereotypes. Words such as *red* (American Indians) and *yellow* (Puerto Ricans and Mexican Americans) are also illustrative of societal values. *Red* has a radical, extremist, and even rebellious connotation. *Yellow*, on the other hand, denotes cowardice, untrustworthiness, and shiftlessness. Theorists hold, therefore, that the English language has organized within it pervasive assumptions about the nature of racial and ethnic groups on the basis of their diversity.

A Historical Perspective

A detailed examination of the emigration or forced migration of various racial groups to America is far beyond the scope of this chapter. However the discussion that follows attempts to show the comparative experiences of the various groups.

It has been suggested that more than seventy million people have emigrated from Europe alone since the seventeenth century, with more than half settling in the United States. Historically speaking, America has been romanticized and idealized as an asylum for the oppressed and the downtrodden, as reflected in Lazarus' poem, "Give me your tired, your poor, your huddled masses yearning to be free. . . . " Contrary to what the foregoing would suggest, however, there has been a constant, perpetual preoccupation with the persuasive influence of ethnic diversity upon America's social standards and traditions. Further reading of the inscription on the Statue of Liberty shows a depiction of the "tired, poor, huddled masses" as "wretched refuse." The characterization of immigrants as "wretched refuse" suggests that, in practice, our nation has been far less benevolent and beneficent than our exaggerated, illusory accounts would suggest.

Generally speaking, immigrants to the United States, for much of the nineteenth century, were drawn from northern and western European countries (Britain, Germany, France, Scandinavia, Belgium, the Netherlands). Toward the latter part of the nineteenth century, a growing number of immigrants were from southern and eastern Europe (Italy, Yugoslavia, Hungary, Czechoslovakia, Poland, etc.). In essence, there was a malevolent distinction between new (those from southern and eastern Europe) and old (those from northern and western Europe) immigrants. The prevailing sentiment was that the "old immigrants" constituted a superior race of tall, blond, blue-eyed Nordics or Aryans, whereas the "new immigrants" included the inferior darker Alpines and Mediterraneans (Gordon, 1961).

The respectability of such racist ideologies was pervasive (Yetman, 1975). Most of the leading statesmen of the time believed in the inherent superiority of the Anglo-Saxon group. In 1870, F. A. Walker, Director of the Census and later president of the Massachusetts Institute of Technology, described the "new immigrants" in the following manner:

> They are beaten men from beaten races; representing the worst failures in the struggle for existence. Centuries are against them, as centuries were on the side of those who formerly came to us. They have none of the ideas and aptitudes which fit men to government. (Quoted by Saveth, 1948, p. 40)

Elwood P. Cubberley (1909), a distinguished educational historian and leader of the time, noted:

> About 1882, the character of our immigration from the north of Europe dropped off rather abruptly and in its place immigration from the south and east of Europe set in, and soon developed into a great stream. After 1880, southern Italians and Sicilians, people from all parts of that medley of races known as the Austro-Hungarian Empire: Czechs, Moravians, Slovaks,

> Poles, Jews, Ruthenians, Croatians, Servians [sic], Halmatians, Slovenians, Magyars, Roumanians, Austrians . . . began to come in great numbers.
>
> These southern and eastern Europeans are of a very different type from the north Europeans who preceded them. Illiterate, docile, lacking in self-reliance and initiative, and not possessing the Anglo-Teutonic conceptions of law, order, and government, their coming has served to dilute tremendously our national stock, and to corrupt our civic life. . . . Everywhere these people tend to settle in groups or settlements, and to set up here their national manners, customs, and observances. Our task is to break up these groups or settlements, to assimilate and amalgamate these people as a part of our American race, and to implant in their children, so far as can be done, the Anglo-Saxon conception of righteousness, law and order, and popular government, and to awaken in them a reverence for our democratic institutions and for those things in our national life which we as a people hold to be of abiding worth. (pp. 15-16)

Between 1895 and 1923 the "new immigrants" numerically surpassed the number of "old immigrants." In 1917 restrictive discriminatory quota legislation was passed in the form of literacy tests and other equally restrictive measures. Established quotas were designed for each nation in proportion to its "contribution" to the American population. All such measures were based on the tendency to curtail immigration from the countries of the "new immigrants" whose racial and ethnic diversity was conceived to be distinct from and inferior to that of the "original" settlers of the country. It was these racist assumptions that were the cornerstone of America's immigration policies from 1917 to 1965 (Yetman, 1975).

There are three ideologies or explanations of the manner in which America's largely white, Anglo-Saxon, and Protestant population has absorbed over forty million immigrants from highly diversified environs and fused them into the contemporary American populace. The three are Anglo-conformity or Americanization, the melting pot, and cultural pluralism. Assimilation, the blanket terminology that covers various subprocesses, is defined as a process by which minority and majority groups are merged and welded, in varied ways, into the total societal unit.

Gordon (1964) suggested that Americanization or Anglo-conformity is the most common form of assimilation imposed on minorities. Cole and Cole (1954) first coined the concept as a most masterful, well-devised plan to divest immigrants of their native culture and attachments and convert them into copies of the Anglo-Saxon prototype. Required is a rejection of all aspects of one's native culture in favor of the behavior and values of the Anglo group, but Anglo-conformity is not enforced uniformly for all groups. Ethnic groups that are identifiably closer to the majority are subjected to less cruel and brutal Americanization.

The melting pot theory envisioned a biological merger of the Anglo-Saxons with other immigrant groups, and their respective cultures, to create a new indigenous American type (Gordon, 1964). The melting pot would require ethnic minority power and influence that is potent enough to exert influence over the majority to effect a merger. More importantly, it would require a majority that willingly asserts the superior cultural elements of the minority.

The melting pot theory found its way into much historical scholarship and interpretation. This premise motivated eighteenth-century French-born writer J. Hector St. John Crévecoeur to ask, Who is the American?

> He is either an European, or the descendant of an European, hence that strange mixture of blood, which you will find in no other country. I could point out to you a family whose grandfather was an Englishman, whose wife was Dutch, whose son married a French woman, and whose present four sons have now four wives of different nations. He is an American, who leaving behind him all his ancient prejudices and manners, receives new ones from the new mode of life he has embraced, the new government he obeys, and the new rank he holds. He becomes an American by being received in the broad lap of our great Alma Mater. Here individuals of all nations are melted into a new race of men, whose labours and posterity will one day cause great changes in the world. (Crévecoeur, 1925, pp. 54-55. Reprinted from first edition, London, 1782, pp. 54-55.)

From this author's perspective, the melting pot phenomenon has never characterized the American scene. Racial and ethnic minorities have retained much of their distinctive heritage and diversity with an American flavor, such that "Little Italy" and "Spanish Harlem" are not quite identical with their European counterparts. The whole notion of a melting pot is illusory. And the originators of the concept never intended it to include the colored ethnic minorities (blacks, American Indians, Puerto Ricans, Mexican Americans). The role of skin color as a discriminating factor is well-recognized in our society. In reality, the theory envisioned the possible fusion of the "old immigrants" with the "new immigrants" who came to America at the turn of the century.

Gordon (1964) and Stewart (1954) suggested that what has evolved in America is a transmuting pot where the majority populace experiments with the culture of the minority groups and refashions members of those groups into an Americanized mold. It is not inconsequential, therefore, that whites wear Afro hairstyles, speak in black dialect, use the soul brother handshake, and wear dashikis. A host of similar examples can be derived from the cultural borrowings from the American Indians, Mexican Americans, Puerto Ricans, and white non-Hispanic immigrant groups.

A new conception, the triple melting pot theory of assimilation, was posited by Kennedy (1944), who noted that although intermarriage crossed nationality groupings, there was a strong propensity to remain within one's religious group, the three major religions being Protestantism, Catholicism, and Judaism. Thus, while marital endogamy appears to be loosening, religious endogamy persists with future divisions along religious lines.

Horace Kallen (1915, 1956) is acknowledged as the leading philosophical exponent of the idea of cultural pluralism that suggests equality and unity in diversity. Of the three major models of assimilation, cultural pluralism exacts the least homogeneity from the minority populace. Cultural pluralism implies equality of status and opportunity for all racial and ethnic groups that retain their distinct identities. Implied as well is full social, economic, and political integration into American society irrespective of one's racial and ethnic diversity. If American society cannot be described as a melting pot, it is doubtful that it can be portrayed as pluralistic. To be sure, racial and ethnic minorities preserve and retain much of their ethnic diversity, yet inequality of status and opportunity still persist.

It is interesting to note that the ideological shift from the Anglo-conformity and melting-pot constructs came not from the immigrants themselves (who were more concerned with survival than with theories of accommodation and adjustment), but from many middle-class visionaries who worked in the settlement houses. Most notable among the middle-class idealists was Jane Addams (1902, 1914, 1930), who witnessed the deplorable effects of those forces that compelled Anglo-conformity. The impact was equally as devastating upon the immigrants' children, who became estranged not only from their parents, but from their racial and cultural heritage as well. The immigrants, economically confined to the ghettoes, were unalterably harmed by the unrelenting, menacing scoffs and attacks on their culture, their language, their institutions, and the very conception of themselves. Worse still was the contemptuous attitude of the children toward their parents' rustic, un-American ways. As John Quincy Adams (1820) declared, the immigrants were forced to:

> . . . cast off their European skin, never to resume it. . . . Whatever their own feelings may be, those of their children will cling to the prejudices of this country. (Niles' Weekly Register, 1820, pp. 157-158)

What followed was an intense ethnic self-hatred with its predictable, debilitating side effects of psychological maladjustment, family disorganization, adult crime, and juvenile delinquency in the form of youth gangs (Addams, 1902, 1914, 1930). What took place is that the adults and the youngsters learned on the street the skills and values needed to survive in a hostile society. Ironically, in 1965 Kenneth B. Clark, the social psychologist, wrote elequently of these same variables operant in today's urban ghettos now inhabited largely by blacks and persons of Spanish descent. Although the racial and ethnic origin of the ghetto's inhabitants has changed, the common threads of poverty, depressed economics, and the lower-class-based status of the urban dwellers remains the same.

Historically speaking, there were gangs composed of white ethnic immigrants in New York City as early as 1728 (Foster, 1974). During the 1850s gang battles were so savage that the police had to enlist the aid of the National Guard. Youth gangs, according to Miller (1969),

> . . . were attributed to the cultural dislocations and community disorganization accompanying the mass immigration of foreigners. . . . The existence of gangs is widely attributed to a range of social injustices; racial discrimination, unequal educational and work opportunities, resentment over inequalities in the distribution of wealth and privilege in an affluent society, and the ineffective or oppressive policies of service agencies such as the police and the schools. (p. 12)

Those who are appalled at today's youth gang actions or the demonstrations by students, blacks, American Indians, Puerto Ricans, and Mexican Americans should examine the historical research on the Draft Riots in New York City in 1863. Conservative estimates suggest that 8,000 were wounded and 2,000 were killed. Although the majority of persons in the Draft Riots were Irish, from many of the ethnic and racial immigrant neighborhoods came the criminals and law breakers of the next generation (Ashbury, 1970). Intergroup violence resulted not wholly from the divergent life styles, speech patterns, or other cultural factors, nor did such problems result entirely from antagonisms among white ethnic groups. The precipitating factors for the creation of such frustrating, aggressive behavior was an alienating life style in a hostile environment and the racial- and class-based nature of their suppression.

Assimilation involves other processes that have attained distinct labels. The first is acculturation, often called behavioral assimilation, or the absorption of the cultural behavior patterns of the dominant society. Amalgamation refers to the biological blending or intermarriage between the minority and the majority and is based upon the melting pot construct.

Structural assimilation relates to the accessibility of the immigrants to the elite social cliques, organizations, institutional activities, and overall civic life of the majority society. To be sure, acculturation of behavioral assimilation has taken place; however, structural assimilation, most assuredly, has not.

Structural assimilation was disallowed for the first generation immigrants; yet it was the second generation that found one much more subtle yet virulent situation (Gordon, 1961):

> Many believed they heard the siren call of welcome to the social cliques, clubs and institutions of white Protestant America. After all, it was simply a matter of learning American ways, was it not? Had they not grown up as Americans, and were they not culturally different from their parents, the "greenhorns"? Or perhaps an especially eager one reasoned (like the Jewish protagonist of Myron Kaufmann's novel, REMEMBER ME TO GOD, aspiring to membership in the prestigious club system of Harvard undergraduate social life), "If only I can go the last few steps in Ivy League manners and behavior, they will surely recognize that I am one of them and take me in." But, alas, Brooks Brothers suit notwithstanding, the doors of the fraternity house, the city men's club, and the country club were slammed in the face of the immigrant's offspring. (p. 285)

Each racial and ethnic minority group has a derogatory or disdainful term to characterize members of its group who have become too Americanized, too Anglicized, or acculturated into the values, behaviors, and attitudes of the dominant majority, to the extent that there is little identification and often a denial of one's own racial or ethnic heritage and diversity. Often called traitors, such individuals, while treated as pariahs and outcasts by their own racial or ethnic group, are well-utilized by the dominant majority for the maintenance of control and subjugation of their own group. Black Americans refer to such persons as "Uncle Toms" or "Oreos" (black on the outside, white on the inside); American Indians use the term "Apples" (red on the outside, white on the inside); Puerto Ricans and Mexican Americans use the term "Tío Tomas" or "Tío Tacos"; and the Irish refer to such individuals as "Lace-Curtain Irish."

The People of Color

Social, historical, and political reality suggests that the arrival of racial and ethnic groups of color (blacks, Puerto Ricans, and Mexican Americans) in America cannot be understood under the framework of immigration and assimilation that applied to European ethnic groups. These people of color share not only similar historical patterns of racial domination and exploitation, but contemporary patterns as well. Today, members of these groups have coalesced and proclaimed themselves a "third world movement," asserting that there is an indisputable connection between the third-world nations abroad (i.e., Africa, Asia, Latin America, the Caribbean) and America's third-world peoples within. By placing the realities of racial oppression and domination within the framework of international colonialism, a common political fate is implied (Blauner, 1972).

The fundamental issue is both historical and political. The third-world notion "points to a basic distinction between immigration and colonization as the two major processes through which new population groups are incorporated into a nation" (Blauner, 1972, p. 52). In the main, white immigrant groups entered America voluntarily even though they may have fled their mother country because of dire circumstances. Colonized groups were conquered, enslaved, and pressured to come to America through force or violence. The third-world premise boldly attacks the publicized myth of America, land of the free, whose population increased wholly through immigration. The third-world perspective reminds us of the fact that America "owes its very existence to colonialism" (Blauner, 1972) and that along with the immigrants and settlers were colonial subjects (conquered Indians, black slaves, and later defeated Mexicans) on American soil.

This section will examine several conditions that differentiate the reality of third-world groups from those of the European immigrants. Blauner (1972) suggests three major factors. The first is forced entry into a society. The second is the subjugation to various forms of labor that restrict the physical and social mobility of the group and its participation in the political arena. The third is a cultural policy of the colonizer that constrains, transforms, and destroys the values, traditions, and ways of life of the colonized group.

Blauner (1972) asserted that American Indians, Mexican Americans, Puerto Ricans, and blacks are people of color whose historical experiences conform to the colonial model. Focusing on the black experience, African people were captured, enslaved, and transported to the southern United States and other lands in the Western Hemisphere. Whether oppression and enslavement took place in the oppressed's native land or in the land of the oppressor's mother country, "colonization remains colonization." (Carmichael and Hamilton (1967) used the term internal colonization to emphasize the black experience in particular.) Similarly, the three-hundred-year process of the virtual annihilation of the original Americans, the American Indians, is a case of classical colonialism, almost identical with Europe's imperious control over Asia, Africa, and Latin America. The same holds true of the conquest and defeat of the Mexican Southwest and its Spanish-speaking population. Puerto Ricans, on the other hand, have undergone a part colonial, part immigrant experience whereby Puerto Rico was exploited by America, yet, at the same time, the inhabitants had some freedom to move and work in the States.

White Europeans' entrance into the American social order provided a degree of free-choice and self-determination that, in the main, was denied people of color. The curtailment of individual freedoms resulted from the racial aspect of their oppression (Blauner, 1969, 1972). Sociologists have rarely discussed the implications of these differences and instead have used the immigrant model as the major analytical focus (Handlin, 1951). However, following the colonial experience, when individuals from nonwhite racial and ethnic groups came to America, the events surrounding their group's prior entry affected the attitudes of the dominant society toward them (Blauner, 1969, 1972).

To be sure, European immigrants and racial and ethnic groups of color have shared some similar experiences, in that both groups were poor and early generations were often employed as unskilled workers. With the exception of a few freed blacks, however, most blacks were slaves and field hands, and were far below the status of unskilled workers. As Blauner (1972) and Litwack (1961) suggested, perhaps the question of how, where, and why new arrivals worked in the States is of primary importance. The different types of work available to nonwhites and whites is a significant reason why their histories have followed disparate paths, in the light of the fact that America's labor forces were selected on the basis of race and skin color.

It has been documented that America's assimilation processes have been oppressive. But, with the passage of time, most white ethnics have blended into the larger society by adopting and adapting to the characteristics of the dominant culture. The cultural experience of nonwhites in America has been different, for colonization and slavery not only weakened but tended to destroy communal ties. White ethnics were at least able to maintain their cultural autonomy at home, whereas Africans, for example, of the same ethnic group could not freely associate because of their assignment to different plantations and because their movements were controlled by slaveholders who attempted to eliminate any measure of group solidarity.

The Immigrant Theory of Progress

Given our shrinking economy with widespread unemployment, high prices, and a scarcity of resources and rewards, white ethnic groups have recently voiced considerable resentment over what has appeared to them to be exclusive attention by the federal government to the needs of nonwhite racial and ethnic groups (Novak, 1971). Blacks, American Indians, Puerto Ricans, and Mexican Americans are being compared with white immigrant groups who emigrated to America and who supposedly started at the bottom of the ladder and "pulled themselves up by their bootstraps." Documentation proves, however, that the bottom has by no means been the same for all groups.

A more sophisticated version of the argument explaining how European immigrants improved themselves economically over time is capsulized in what might be called the waves theory. This theory claims that groups of European immigrants came to America at different times, met discrimination, and, after numerous trials of varying length, overcame adversity and ascended the ladder of American prosperity. This process was repeated again and again by each new wave of immigrants. According to this theory, blacks, American Indians, Puerto Ricans, and Mexican Americans are viewed as only the most recent groups of "immigrants" to go through this process; for it was not until the twentieth century that large numbers of these groups moved to the cities and to the North and thereby began to encounter modern social problems of adjustment. The proponents of this view further argue that, in time, these newcomers, just as their European counterparts did, will eventually become a part of the American mainstream and share in the bounty and prosperity of this country.

The problem with this view is that it overlooks several fundamental aspects of the United States experience, parts of American history that, if accurately portrayed, do permanent damage to such a faulty analysis. A cursory analysis of just the black experience in America provides us with some interesting insights. For instance, after the American Indian, and along with the first English immigrants (those who arrived before the Mayflower), blacks were living in America. The black man is by no stretch of the imagination a newcomer to America. In terms of language, tradition, mores, and culture--the most important avenues for acculturation into a society--the black American, even with his distinctive cultural identity and diversity, was as qualified for American citizenship as the first- or even second-generation European immigrant. Certainly this was true as early as 1880, when the major waves of Europeans began to arrive, more than 250 years after the first African slaves were brought to America. Moreover, this sociological claim to share in America's bounty is made without considering the enormous contribution blacks made in winning independence for this nation or their subsequent military participation in preserving it since then. It is made, also, without mentioning the decisive role that blacks have played in the economic development of America. Similar analyses could be made for each nonwhite group under consideration in this chapter.

Furthermore, notwithstanding the horrendous treatment of the American Indians, these groups, on the basis of their racial and ethnic diversity, are the most abused and discriminated against in America. The Irish, the

Italians, the Germans, the Poles, the Jews, and a host of others have come to this country at times when certain of these groups (blacks, American Indians) were at the bottom of the economic spectrum. If the waves theory is correct, then all of these European ethnic groups should clearly be below blacks and American Indians in terms of social-class standing, no matter how well-off economically they may be. In reality, however, when the first nineteenth- and twentieth-century European immigrants initially arrived, at worst they dislodged nonwhites from their meager hold on the bottom rung of the economic ladder, pushing nonwhites off or beneath them. At best, they began at a level slightly above (Litwack, 1961). Some European immigrants have suffered discrimination and fought against it; they have moved on up the ladder and have witnessed other white ethnic groups, arriving after them, go through the same process. But the masses of nonwhites have been kept at virtually the same position, at the bottom of the economic ladder--relatively the same position as they had when they first arrived in America. The irony is that nonwhites often taught European immigrants the skills that would, at times, enable the white ethnics to replace and even move up and beyond them on the economic ladder. Also, tragically, along with other qualifications for citizenship, far too often these immigrants have manifested racism toward nonwhites as a necessary characteristic of their newly adopted Americanism (Westie, 1964, 1965).

Racial and ethnic groups of color in America's cities are not just other urban migrant groups with a marked potential for assimilation into the mainstream of American society, but, as groups, they have failed for generations to gain the rewards and statuses attained by white European immigrants. It is wishful thinking, therefore, to characterize third-world problems in employment and education as transitory and capable of resolution over time. Many of these problems have become worse over the years and have been strongly resistant to solution. The ghettos of white ethnics have dissolved as social and economic opportunities have increased, whereas today's nonwhite ghettos have become more isolated and crowded as urban renewal in the city centers and the suburban drift of whites have depressed opportunities in employment, housing, and education.

Moreover, most of the earlier immigrants arrived knowing that generations of their predecessors had worked their way out of poverty by diligence, saving, and perseverance, and they believed that they could do likewise (Hummel & Nagle, 1973). Today's third-world groups have no such conviction. For too long, they have experienced little in the way of reward for hard work, regularity, and frugality; and they have little evidence that the future will be different.

Although European immigrants often met with cruel discrimination, they knew that, given the level of technology at that time, their unskilled and semiskilled work was needed and that the opportunities to improve their economic condition were real and visible (Hummel & Nagle, 1973). For most urban nonwhites today, however, jobs are scarce and opportunities elusive. Confined ever more densely in central cities and lacking the qualifications to move up or out, they have become the city's captives. Having little social basis for self-esteem, their ambitions and confidence in their society depressed by the continual experience of failure, it is understandable that many are tempted to strike out in anger or turn inward to the solace of fantasy through alcohol or drugs (Clark, 1965).

Although the nonwhite employment patterns may have much in common with those of poor, lower-class whites, there is a certain measure of irreducible discrimination against nonwhites that reflects their high racial visibility and the historical condition of oppression. Insofar as skin color is used as a criterion for invidious distinctions in employment, there is a dimension of nonwhite employment patterns that is unique and idiosyncratic. Skin color and history, then, introduce a measure of uniqueness in third-world groups' employment patterns that has separated the nonwhite farther from his society than any European immigrant.

At one point the quantitative difference between the extent of discrimination suffered by people of color and that suffered by white European ethnic groups begins to mean that the character of the discrimination is also different. Certainly the extreme racists in America are generally anti-Semitic and anti-Catholic as well as anti-black, anti-Puerto Rican, anti-American Indian, etc. However, Jews and Catholics have achieved greater acceptance because they are white, whereas nonwhites have not: that color line is harder and more difficult to cross than any white ethnic, religious, or social line has ever been.

We err in not seeing any differences between the ghettos of the white ethnics and the third-world ghettos of today. The ghettos of earlier groups were transitory, perceived as a first step on the road to affluence, and for this reason, the squalor and the deprivation could be borne. To the nonwhite, whose parents and grandparents grew up in deprived economic circumstances, the real or perceived chances of movement are slight, making it difficult to bear the conditions of deprivation. Furthermore, many ghettos of the earlier white immigrant groups were in close proximity to places of work, and in some cases economic opportunities existed within the geographical limits of the ghetto itself. Today, third-world people have a far different situation. The movement of industry from the cities to the suburbs has left little other than unskilled service employment to be found in the city.

Similarly, today's ghettos are characterized by a level of resentment and hostility that has little parallel to earlier types of ghettos. Numerous factors contribute to this (Ferman, Kornbluh, & Miller, 1969): (a) There is a high concentration of the permanently unemployed—old and young—who have years of productive life left but see no possibility for jobs. (b) The allocation of municipal and state resources for social services and education is inadequate to deal with the needs generated in ghetto life. (c) The tensions and animosities between ghetto residents and the police have heightened as the relationship between them has deteriorated. (d) The opportunity for advancement facing nonwhite youth is perceived as restrictive and controlled by a white power structure unresponsive to change. (e) There is a political, social, psychological, and economic alienation--both felt and real--from the mechanisms that might produce needed changes (e.g., the social, political, and economic systems). (f) There are few "success models" and sources of job information from those whose experiences could provide guidelines for social mobility in the larger society.

It is true that some of these phenomena characterized the ghetto experiences of white European ethnic groups, but in time, the barriers eroded for them.

Ethnicity and Schooling

What are the implications of ethnic diversity for school processes and policies? In answering this question, it becomes necessary to understand the role and function of schooling in our modern industrialized, capitalist society. To understand schools as part of our larger social system, it becomes necessary to take the social systems view, and remain cognizant that everything is ultimately related to everything else (Hummel & Nagle, 1973). That is, schools, as societal institutions, are mutually aligned, sustained, and reinforced by other societal units. There is little use, therefore, in studying schools apart from the social system that created them.

Schools under the American capitalistic system, contrary to Horace Mann's belief, are not "the great equalizer" of the conditions of men (see Bowles & Gintis, 1976, p. 26) facilitating the movement of the poor and economically disadvantaged into the mainstream of American economic, social, and political life. Far from being "the great equalizer," the schools help perpetuate and maintain a social-class ideology and direction that legitimize the existence of inequality and class privilege (Christoffel, Finkelhor, & Gilbarg, 1970). Similarly, the longstanding myth that America's schools are neutral, apolitical institutions is equally illusory. To call them neutral is to indicate one's ignorance of the racist, ethnocentric, class-based nature of American society and its interrelated institutions. As sociologist Howard Becker (1961) has asserted, the schools in our heterogeneous society operate so that members of the subordinate groups, on the basis of their racial and ethnic diversity, receive less educational opportunity and less opportunity for social mobility. In essence, schools institutionalize and maintain the privilege and values of the dominant culture.

Schools have evolved in America not as part of a pursuit of equality but rather to meet the needs of our capitalist economy for a disciplined and skilled labor force, providing, at the same time, a mechanism for social control in the interest of political stability (Bowles & Gintis, 1976). As the economic importance of skilled and well-educated labor has grown, inequalities in the school system have become increasingly important in reproducing the class structure from one generation to the next. Unequal education, therefore, has its roots in the very class structure that it seems to legitimize and reproduce. Historical scholarship substantiates the failure of the public schools to educate the masses of nonwhite Americans and persons from lower class and lower socioeconomic environments (Greer, 1972; Friedenberg, 1973; Lauter & Howe, 1973).

Moreover, schooling in America performs certain cultural functions: the socialization and acculturation of the young to the American way of life; the transmitting of cultural meaning and content; the provision of adult models for the young; and the selecting and sorting of students on the basis of achievement (Brembeck, 1971). Socialization, as defined here, is the process by which the young learn the values of the culture and how to incorporate them into "appropriate and accepted" behavior.

Transmission of values of the dominant culture is carried out through language, literature, history, traditions, music and art, religious and ethical beliefs, and a sense of what is "proper and improper" in interpersonal relations. The school also transmits the conflicting values in a culture; for example, America's concepts of rugged individualism and fierce competitiveness, as opposed to cooperativeness and accommodation. It is this wide acceptance of the values of the dominant society that keeps all our social institutions operating by reducing conflict and thereby stabilizing society. By using schools as the "stated" vehicle to confer status and power, we ensure that those who gain status and power will perpetuate the status quo rather than provide solutions to overthrow it.

Not only do America's schools socialize its students, transmit values, and provide role models, but they also influence which set of values the student acquires by determining his life chances. They do so by sorting and selecting students on the basis of academic achievement. One's academic achievement helps to determine one's curriculum, scholastic standing, motivational directions, and opportunity for further education; and these tend to determine the nature of the opportunities that will come one's way as an adult. The key concepts of role and status cannot be underplayed here, for schooling and the amount and type of schooling in America help to determine one's eventual adult status and prestige. Higher status is accorded to tasks that require longer periods of formal preparation. Generally speaking, those persons with higher levels of education will be found in the higher vocational and professional levels, levels that carry with them higher income, status, and responsibility.

Furthermore, if one looks at the significant research compiled on social class and educational opportunity in America, one finds that there is a strong positive correlation between one's social-class orientation and one's educational opportunity. The higher one's social class or social-class orientation, the higher will be one's educational opportunity; the lower one's social class, the lower will be one's educational opportunity.

The level of status or honor given to members of a society is contingent upon the amount of deference or regard with which an individual or group is held (prestige). Given the capitalistic nature of American society, money not only makes the man but enables one to command the deference, if not the respect, of others. Generally speaking, the three indices of social class--schooling, income, and occupation--are approximately parallel and consistent for most individuals. Therefore, an individual with low educational attainment would have a low income and a less than prestigious occupation. The converse is also true. Research has revealed that for ethnic minority group members, the pattern is often inconsistent. A classic example is that of a well-educated minority individual who has the education requisite for high status, but to whom it is denied. Several sociologists have indicated that the precursors of most minority reform movements are composed of such status-inconsistent persons (Olsen, 1970; Paige, 1971; Warren, 1971).

Despite significant research data to the contrary, schooling is still perceived as the lever to achieve higher social-class standing and better occupational opportunities (Bowles & Gintis, 1976; Carnoy, 1974, 1975; Christoffel et al., 1970). As to the prestige of ethnic minority groups, the achievement of a few individuals plays an insignificant role. Individual mobility must be considered separately from collective mobility, for sociologically speaking, as Dworkin and Dworkin (1976) suggested, a group is different from the sum of its constituent parts. It is true that there have been individuals from ethnic minority groups who have achieved wealth and fame--e.g., Thurgood Marshall, Ralph Bunche, and others; but this serves only to indicate that individuals (constituent parts) of a group may be mobile, while the group of which they are members is accorded low prestige and differential and pejorative treatment.

Given the glaring inequities and inequalities in America, it is the non-white racial and ethnic groups whose share of society's rewards and opportunities is disproportionate. Schooling has long been posited as the place to break the cycle of poverty and scale the social-class ladder. This view is propagated by racial and ethnic minorities, themselves, as they hold an almost impervious belief in the value of schooling. Their belief appears unshaken by the historians, economists, sociologists, and educators who have seriously questioned the relationship of schooling attainment to social mobility. Proponents of this latter view hold that inequality in the United States is rooted in the class structure and in the system of racial and ethnic (and sexual) power relationships. The school system is but one of an alignment of institutions serving to perpetuate such privilege. Supporters also hold that the school system is relatively powerless to correct economic inequality, for the racial and ethnic bias in schooling does not produce, but rather reflects, the pyramidal structure of property, privilege, and power in society at large (Bowles & Gintis, 1976; Carnoy, 1974, 1975; Reich, 1978). It is believed, therefore, that it is primarily the economic system that reinforces racial, ethnic, and other distinctions of birth.

To be sure, schools as well as other societal institutions have served both discriminative and assimilative functions (Epps, 1974). Although Greer (1972) would argue the contrary, Epps believed that the schools' assimilative function aided in the blending of "new" and "old" immigrants into a more homogeneous populace. But it is the discriminating function of schools that has made it increasingly and predictably difficult for racial and ethnic minorities to acquire the quantity and quality of schooling necessary for successful competition in our highly industrialized society.

As stated earlier in this chapter, society accepted, with reservations, "new" immigrants to America as long as they discarded their ethnic identity and diversity and conformed to Anglo-Saxon normative values and standards. Also discussed earlier was the collaborative impact of societal institutions in the maintenance of patterns of domination and control among conflicting groups. Similarly, the role of skin color and other physical distinctions as discriminating, dominating influences in American society has been assessed. An overwhelming obstacle has been placed upon members of racial and ethnic minority groups of color that serves to prevent their successful integration into the system, even when they exhibit the outward manifestations of Anglo-conformity. Epps (1974) asserted that, for them, acculturation is insufficient to thwart the overt and covert racism and discrimination that pervades nearly all aspects of their lives. He reasoned, and justifiably so, that "ethnic, class, and racial chauvinism permeate the American social institutions and exert a strong influence on the way individuals interact with these institutions" (p. 176).

By differentially assigning inferior status to the minority culture's racial and ethnic diversity, dominant white Anglo-Saxon standards permeate every fiber of schooling processes and policies through the following means: the inculcation of certain values that students are taught; the stereotypes and models to which they adhere and aspire; the teaching techniques and strategies utilized; the perpetuation of the myths of racial and cultural inferiority and superiority; the relative void of information concerning the contributions of non-Anglo-European peoples to America's heritage via approved curricula and textbooks, and the influence of this void upon the self-concept of minority children; the use of language and the denigration of nonstandard forms of speech; the repeated massive underachievement of racial and ethnic minority youth; the exclusion of minority parents from school decision-making processes in even a participatory, as distinct from a shared power role; the use of "standardized" tests that assess one's degree of Anglo-conformity, acculturation, and Anglicization; the resource allocation to urban school systems; school disciplinary processes and suspension and expulsion procedures; faculty and school desegregation, as distinct from school integration; and compensatory reform efforts that serve to ameliorate inequality rather than change the systemic structure upon which power and privilege are based.

It should be noted here that this author wholeheartedly applauds and supports those protagonists of multicultural education, compensatory education, ethnic studies education (Banks, 1979), and the like. Such liberal attempts to better the plight of society's racial minorities should not go unnoted, for indeed they are commendable. However, given the structure of our society, such liberal reform efforts are ironically contradictory in nature. The school system serves to reproduce and perpetuate social, political, and economic inequality and even to distort individual development (Bowles & Gintis, 1976). "When education is viewed as an aspect of the reproduction of the capitalist division of labor, the history of school reforms in the United States appears less as a story of an enlightened but sadly unsuccessful corrective and more as an integral part of the process of capitalist growth itself" (p. 49). The classic irony is that such liberal reform efforts compel, at best, only slight modifications within the social system. Our social system is so adaptive that such modifications become institutionalized over time and do not serve to alter the existing system of stratification and inequality (Shibutani & Kwan, 1965; Barth & Noel, 1972; Olsen, 1968). It is possible that such reforms indeed act as potent forces for equality, and such reforms can be viewed as part of an overall, comprehensive strategy of systemic transformation. However, to consider such reforms in isolation from other controlling systemic variables is far too illusory.

Conclusion

In conclusion, this chapter has made a rather modest effort to examine the role of ethnic diversity in contemporary America and of its influences in the public school environment. This author does not pretend to have all of the answers to many of the dilemmas raised here. We have discovered that ethnic diversity plays a role in schooling identical to that which it performs in the larger society on a macro-level. For blacks, Puerto Ricans, Mexican Americans, and American Indians, racial and ethnic diversity serves as a placer function to differentiate and define one's role, status, and function in society. For white immigrant groups, merely adopting the Anglo-Saxon dominant culture has been largely sufficient to influence their groups' fluidity in attaining higher status. Skin color and other physical traits and distinctions for certain groups, however, have introduced a measure of constancy and permanence in their relative status, irrespective of the extent of their acculturation, schooling, and conformity to the dominant culture.

It is of utmost importance to mention the highly laudable efforts of some very sensitive and humane teachers and administrators who, despite insurmountable odds, are developing the intellectual potential of racial and ethnic minority youngsters to address crucial rather than merely surface issues in our society. Similarly, teaching minority youngsters an acceptance of self along with an appreciation of one's diversity and heritage is political dynamite in transforming one's focus from an individual to a collective and group perspective.

This author would like to end this chapter on a rather optimistic note with a plea for society's power dominant majority to open the avenues for equal economic, social, and political opportunity for all of America's populace. The alternative for America is to continue with "business as usual," continuing as well to sow the seeds for its own suppression (Glenn, 1963, 1965, 1966; Heer, 1959; van den Berghe, 1967, 1970). History tells us, however, that there have been no struggles for change in American society that have been easy ones. As Frederick Douglass stated rather eloquently--"Power concedes nothing without demand. It never does and it never will. . . . " (see Bennett, 1966, p. 274). We have seen the capitulation and overthrow of powerful societies that have been founded upon racial and ethnic stratification and inequality. Unfortunately, for the foreseeable future, racial and ethnic antagonism as the basis of one's diversity will long remain a matter of realistic conflict in American society.

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CHAPTER 6

Culture as a Manifestation of Human Diversity

Charles Harrington

Knowledge of culture is vital to an adequate understanding of human diversity, but for the purpose of educational planning that knowledge must not be superficial. This chapter is divided into several sections. The first section defines the concept of culture and places the chapter in a sociopolitical context. The second section identifies various theoretical positions that have been taken by anthropologists concerned with education. In section three, three approaches to culture are distinguished: (a) culture as the context within which education occurs, (b) culture as a functional characteristic affecting teaching and learning, and (c) the view of culture as a status characteristic independent of function. The third approach is found inadequate to educational planning. Section four reviews findings typical of the literature as it relates culture to education. The next three sections of the chapter return to the three approaches identified in section three. In section five, culture is seen as providing the context within which education occurs. Section six is a discussion of the functional characteristics of culture as they affect education. Section seven deals with the related but more specialized issue of how cultural phenomena can be changed, and compares adequate assessment techniques with inadequate uses of the culture concept (as status or stereotype) often misused in relation to educational planning. Finally, in section eight, the implications of the three preceding reviews concerned with the design of educational experiences for children are discussed.

This chapter attempts to examine in detail the research findings that relate cultural diversity to education. Such an assignment forces the anthropologist to be critical about the empirical evidence that demonstrates that culture has important pedagogical consequences. This is difficult because to the anthropologist it is obvious that

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cultural differences should be reflected in differences in the effectiveness of different educational strategies. It is so obvious that we do not usually expose the belief to question. I do not, in my fundamental sense, disagree with the anthropological truism. My job, however, is to see what empirical evidence there is to uphold it. If, indeed, we are to show that there is pedagogical relevance in cultural aspects of human diversity, we must delineate a conceptual (not political) framework that will enable us to understand such findings.

Definition and Politics of Culture

Books could be written (and have been--see Kroeber and Kluckhohn, 1952) simply on the definition of culture. Since the main point of this chapter is to assay the relevance of cultural differences to pedagogy, we shall not be able to do full justice to the variety of interpretations that have been given to the term. Most anthropologists (and most behavioral scientists) would agree with a formulation of culture as the way of life of a people.

> Culture consists of patterns, explicit and implicit, of and for behavior acquired and transmitted by symbols, constituting the distinctive achievement of human groups. . . . Culture systems may, on the one hand, be considered as products of action, on the other as influences upon further action. (Kluckhohn, 1965, p. 73)

The final distinction deserves further discussion. For some, culture is primarily a descriptive concept. It is considered a product of human action: observe the action and you can label the culture. For others, culture is an explanatory concept; culture is seen as influencing further action. Both positions are valid. In a sense, these positions vis à vis culture are forerunners of a distinction that Gordon (1977) makes for educators, a distinction between status and functional characteristics. The descriptive part of culture is or can become a status characteristic or label for the person so identified. "He is a Hopi" is a statement that is essentially little more than a use of the culture concept as a way of labeling humans into culturally discrete units. It is, of course, important for anthropologists to do so: we need to question whether and when it is also important for educators to do so. The second use of culture as an explanatory concept is close to what Gordon calls a functional characteristic. Functional characteristics are those that have specific consequences for a child's capacity to learn. Cognitive style and motivation are two examples of functional characteristics that are discussed by other authors in this report. We need to discuss when culture has sufficient explanatory power to be labeled a functional characteristic independent of other functional characteristics (most notably language) with which it is highly associated.

As with some other chapters (especially those on ethnicity and social stratification) in this series, the political and historical context must be considered before we address the issue of cultural diversity itself. We need to examine the political context within which our discussion will be interpreted. Cultural diversity is important to educators in two kinds of settings: in planning education when we meet other cultures, and in dealing with in-coming groups forming multicultural neighborhoods or communities within the United States. Our society's attitudes toward cultures in such settings is important as background to this chapter. The United States' attitude toward other cultures' education is seen plainly in its treatment of the native Americans. Those who were not slaughtered were later to be infantilized. The number of studies and articles in anthropology showing that it is important to take native systems into account must be seen as a direct response to the opposite treatment that the government has given the native American. For a detailed review see Fuchs and Havighurst (1972).

The second setting relates to our government's attitudes toward in-coming migrant cultures. Here too the record is important to an understanding of our present situation. The historian E. P. Cubberly (1909) inadvertently caught the spirit of the society:

> These southern and eastern Europeans are of a very different type from the north Europeans who preceded them. Illiterate, docile, lacking in self-reliance and initiative, and not possessing the Anglo-Teutonic conception of law, order, and government, their coming has served to dilute tremendously our national stock, and to corrupt our civic life. The great bulk of these people have settled in the cities of the North Atlantic and North Central States, and the problems of proper housing and living, moral and sanitary conditions, honest and decent government, and proper education have everywhere been made more difficult by their presence. Everywhere these people tend to settle in groups or settlements, and to set up here their national manners, customs, and observances. Our task is to break up these groups or settlements, to assimilate and amalgamate these people as part of our American race, and to implant in their children, so far as can be done, the Anglo-Saxon conception of righteousness, law and order, and popular government, and to awaken in them a reverence for our democratic institutions and for those things in our national

> life which we as people hold to be of abiding worth. (Cubberly, pp. 15-16)

Much appears to have changed in the seventy years since Cubberly wrote his singular conception of the responsibility of American schools to national origin minority populations. In the 1970s, at least, the federal government and large portions of the academic establishment proclaim their tolerance of cultural pluralism, and bi-cultural, or more properly, multi-cultural, education is openly encouraged. Rather than following Cubberly's prescription to "break up" other ways of life and to implant instead certain good old-fashioned Anglo-Saxon virtues, today's educators are encouraged to respect cultural differences, and to get on with the job of teaching the basics. On the surface this is a much more tolerant view of human diversity, at least diversity attributable to the cultural domain, than there has been in the past. However, as the job of the educator has been conceptually narrowed from culture butcher to culture broker, insufficient attention has been given to the cultural implications of various school tasks and structures. This is to say that while teachers may no longer be openly antagonistic to other cultures' values, they may be so implicitly. The same teachers who would find Cubberly's an extreme position with which they could not sympathize might be the very people inadvertently carrying out his advice. Thus, well-meaning individuals may do as much cultural damage as the overt bigot.

Overreactions are possible in the other direction as well. Fitzgerald (1979) found some so intent on cultural differences that she characterized their position as maintaining

> that Americans have no common history, no common culture, and no common values, and that membership in a racial or cultural group constitutes the most fundamental experience of each individual. The message would be that the center cannot, and should not, hold. (p. 54)

However, it should be remembered that Fitzgerald was talking about the rhetoric of textbooks, and not the reality of classroom behavior and teacher attitudes.

Cubberly's attitude is probably indicative of the fact that Americans have always had trouble respecting other cultures. It is still true today. Recent attacks made in Congress and elsewhere charge that bilingual education, for example, should not have a cultural component. These attacks involve two issues, the first political, the second pedagogic. Politically, critics like Senator Hayakawa are overtly returning to the position so clearly enunciated by Cubberly. To be sure, the neo-Cubberly thinking does not speak about Anglo-Saxon virtues;

we in the seventies are more sophisticated than that. Or are we? Listen to Hayakawa speaking to the United States Senate:

> I believe we all grew up with the concept of the American melting pot, that is the merging of a multitude of foreign cultures into one. In this world of national strife, it is a unique concept. I believe everybody in this chamber will agree that it had a fundamental impact on this nation's greatness.[1] (From the Congressional Record, 1978)

Perhaps if we asked Hayakawa to define the one culture into which we are all to melt he would, indeed, produce an answer rooted in righteousness, law and order, and popular government. In any case, it is clear that the political issue addressed here has to do with unitary conceptions of the American body politic, an idea dubiously grounded empirically.

The pedagogic implications of such a position are even more tenuously held. The use of melting pot imagery assumes not only that (a) there is one American Culture, (b) that other cultures can be made like it quickly, but also (c) that it is good to do so--good for the child as well as for the national culture. None of these three assumptions is supported by evidence presented here. To be sure, there is one nationwide political and economic system (and others as well), but not one culture held by all people living in America. Second, cultures do not change quickly but, rather, resist change except in certain unusual circumstances. Thus change should be attempted only for compelling reasons. The third assertion, that it is good to change, is very ethnocentric. We need to measure the costs of trying against the costs of not trying, both for the individual as well as the culture. Children need to learn to participate in mainstream economic and political systems, but must they give us their culture to do so?

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[1] This resembles a Platonic notion of politics that views the good society as one filled with harmony and views as evil the factionalism, competition, shifting power base of politics as we know it. Everyone is familiar with the notion of politics as a "dirty business." Indeed, in study after study, groups throughout society rank the practitioners of politics at the lower end of respected and desirable occupations. They do this while ranking those who profit from the fruits of politics (i.e., Supreme Court justices, U.S. senators, and policemen) at the top of the scale. Plato chose to treat the search for competitive advantage in the distribution of the fruits of power (material goods, deference, safety) among the various groups of society as "symptoms of an unhealthy society" (Wolin, 1960, p. 42). His science of politics contained in it what Wolin has referred to as a major paradox: it was sworn to an eternal hostility to the very subject it pretended to study.

It is also questionable whether it is good for the culture to be one homogenized whole, even if this were possible. There is adaptive value in diversity; the greater the diversity, the greater the potential adaptability. For example, the Eskimo populations now being destroyed could adapt to petroleum depletion better than the people of downtown Houston. As to the effect on the child, this needs to be examined in detail at several points below. Long-term "benefits" must be weighed against short-term "costs." But when there are no long-term benefits, are any costs bearable? Simply put, the purpose of formal schooling should be to open opportunities to children, not to close them.

Recently, in responding to criticism by Hayakawa and others, the Board of Directors of the Council on Anthropology and Education approved a statement that provided, among other things, the following statements concerning culture and pedagogy:

a. Culture is intimately related to language and the development of basic communication, computation and social skills;

b. culture is an important part of the dynamics of the teaching-learning process in all classrooms, both bilingual and monolingual;

c. culture affects the organization of learning, pedagogical practices, evaluative procedures, and rules of schools, as well as instructional activities and curriculum;

d. attention to the cultural dimensions of education has widespread potential utility in resolving performance dysfunctions and interpersonal and group conflicts in schools and society;

e. culture is more than the heritage of a people through dance, food, holidays, and history. Culture is more than a component of bilingual education programs. It is a dynamic, creative and continuous process which includes behaviors, values, and substance shared by people that guides them in their struggle for survival and gives meaning to their lives. [As a vital process it needs to be understood by more people in the United States, a multiple society which has many interacting cultural groups.];

f. public institutions, such as schools, should facilitate the cross cultural learning of their clients as basic tools for effective citizenry, and economic, political and psychological existence;. . .

g. all those involved in the educational process--policy makers, program officials, school personnel, and students--are cultural beings, both products of and producers of culture, influenced in decision making by their cultural background and orientation. Therefore it is imperative that all personnel responsible for educational decisions be conscious of the cultural factors which shape their actions and also, that they analyze the social/cultural impact of their actions with regard to the realization of quality education and equity of educational opportunity for all students. . . . (Reprinted by permission from the minutes of the Board Meeting of August 1978 of the Council on Anthropology and Education.)

Culture is, of course, an abstraction. As distinct from a group of people, you cannot see culture any more than you can see evolution or gravity. This is one reason that there are so many definitions extant. Another is that our definition of culture is purposely broad: explicit or implicit patterns of the behavior of human groups--patterns that are acquired and transmitted by symbols. While such a definition carves a lot out of the cultural domain (most notably biology and biochemistry), it leaves a lot within the domain as well.

The concept of culture is an anthropological curiosity. American anthropologists use the term frequently, but it is almost totally absent in the British literature of the discipline. In the English literature, one encounters society, but rarely culture. By focusing his analytical attention on society, the British anthropologist is declaring his interest in human behavior. He is seeking regularities of social interactions, or human behaviors. He is less interested in how people feel, their attitudes or values or beliefs, than he is interested in how these attitudes, values, or beliefs are translated into action. On the American side of the street, and to a certain degree the French as well, we have instead focused on culture, by which we mean society as it is understood in England, plus the value systems of that society and the individual attitudinal, belief, and value systems that support it. This makes us even more interested in the relation between the individual and society.

Some Anthropological Orientations

Culture is clearly a misunderstood concept. In colloquial usage one talks about a "cultured person" as someone who enjoys fine art, classical music, crystal glassware. This "high" culture conceptualization does considerable violence to and provokes misunderstanding of anthropological usages of the term. Whereas the colloquial usage is highly value laden (both ways--in Neil Simon's play The Odd Couple, Felix is "Cultured" and proud of it, while Oscar isn't and proud of it), the anthropological usage as defined in the first section is value free. In the anthropological usage everyone is by definition cultured, assuming that he grew up interacting with people of a culture. Culture is not high or low; cultures are diverse. The urban Nigerian is no more cultured than the rural Nigerian, any more than the urban New Yorker is more cultured than the rural farmer. The content of the culture of the urban dweller may be more complex than the culture of his rural cousin, but the difference is one of quantity not quality. Similarly, the urban dweller may interact with a greater diversity of individuals, but this does not make him any the more cultured (although an anthropological usage might have him becoming more multi-cultural--see Goodenough (1976)--thus making him more able to function in multi-cultural settings--see Harrington, 1972).

It is easy to point out the usages that we do not intend for our definition of culture, but more space is required to describe what we do mean by culture. In doing so we will rely, not surprisingly, on the various usages that anthropologists have found useful for the culture concept, and, more specifically, those anthropological theories that are especially relevant to education. Comitas and Dolgin have recently published a review, excerpted below, in which they share much of my own thinking about the orientations of culture transmission, psychological anthropology, symbolic anthropology, and social anthropology.

> Cultural transmission . . . may well be considered the sine qua non of most cultural anthropologists involved with education. It may also stand as the anthropological definition of education itself. Significant research has been carried out by . . . anthropologists employing various models of cultural transmission in their analyses of small-scale societies, large homogenous societies and of complex, culturally heterogeneous settings. In essence, anthropologists directly involved in questions of cultural transmission focus on the forms through which values and attendant behavior are taught and the specific content of the societal, cultural, or group value system. George Spindler, for example, pinpointed a major issue . . . when he inquired whether the culture transmitted by the school constrains instrumental choices children make of urban lifestyles and the means to them.

The theoretical underpinnings of cultural transmission stem from a number of subdisciplinary "schools"; high among these stands psychological anthropology . . . which examines cross-cultural variations of learning processes, socialization, and social change, and how individuals learn which actions and beliefs are acceptable, "sane," or possible. Psychological anthropologists have studied acculturative processes, delineating the dimensions of social change in particular situations. In their examination of phenomena such as ethnic stereotyping, the work of psychological anthropologists can and does bear directly on questions of curriculum development and academic placement. More and more this area of anthropological inquiry has approached the assessment of educational programs or institutions through the simultaneous investigation of historical and situational factors which define the larger setting within which individuals are socialized. Furthermore, this work has brought a valuable corrective to policy makers in its stress on cross-cultural possibilities and alternatives; this emphasis reflects a basic and useful tendency within anthropology, the tendency to question basic principles, principles that other disciplines and policy planners may take for granted.

Another anthropological orientation, of relatively recent vintage, commonly referred to as symbolic anthropology, is related to aspects of cross-cultural psychology. Symbolic theory is concerned with codes through which meaning is created, expressed, limited, or altered. The approach is a potentially productive avenue toward demarcating and understanding structures of systems of symbolic forms used by social actors (teachers, students, administrators, parents) to define and act in educational environments. The ways and extent to which these systems can be manipulated by individuals or groups is crucial to understanding modes of social control within schools or other educational arenas. Links at the systemic level between symbolic usages explicitly found in institutions of education and in other areas of social life can be revealed; such research will enhance comprehension of sociocultural patterns defining educational settings and activities, per se, and other parts of the social order to which these connect or in which they are embedded. This genre of research, not yet fully integrated within anthropology and education, should be encouraged.

Research which suggests the character of learning processes, motivational patterns, and codes for meaning must be contextualized in light of institutional structures and goals, both those which are explicit and those which are less apparent

> to social actors. Social anthropology, including structural-functional theory, provides the bases of a macro-sociology geared toward describing social structures which lie between, and often mediate, the individual and the collectivity, and offers a frame within which to examine the choices people make within social contexts. From within this perspective, researchers have demonstrated the consequence of analyzing the social structures of classroom situations as a "port of entry" to educational research. Studies of social structure combine with studies of social organization; these notions are explained by Raymond Firth, who sees social structure as establishing precedents, providing and limiting the range of alternatives, correspondingly, social organization, involving individuals' choices about sets of possible actions, expresses variance in the systemic ordering of social relations. Investigated jointly, social structure and social organization allow comparisons of student behaviors and perceptions in different types of school situation, studies of teacher-student interaction, and, at a more inclusive level, studies of the relation between schools and the communities in which they are set. (Comitas & Dolgin, 1978, 170-173)[2]

These four anthropological orientations--culture transmission, psychological anthropology, symbolic anthropology, and social anthropology--are not the only anthropological orientations to culture, but are useful in forming an introduction to studies relating culture to education.

We turn now to an examination of how anthropologists study education. Anthropological definitions of education have consistently marked a point of departure between anthropology and other disciplines. Anthropologists have taken very broad views of education, insisting that it not be confused with the more narrow concept of "schooling." By defining education as encompassing both formal as well as informal learning, the anthropological conceptualization of education has become quite nearly "everything that is learned by a person throughout his lifetime," whereas definitions used by educators have occasionally been so narrow as to be limited to what a child learns through the formal curriculum in school. The anthropological definition forces attention to culture, which others ignore. Several historians of education, in recent years, have argued that a definition of education which includes more than just schooling is essential, and this has led them, too, to pay more attention to other cultural variables (see Cremin, 1970).

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A second hallmark of anthropological approaches is the methodology brought to bear on the problems researched. Cultural transmission, social, psychological, and symbolic anthropology all share a dedication to the variety of techniques subsumed under the label "participant observation." Participant observation to an anthropologist involves the concept of field work: the anthropologist goes to the natural setting of education and observes it in situ. The investigation is, at least in part, enthnographic. That is, it is to a degree descriptive and provides information comparing what can be observed with other kinds of data (e.g., what people say is happening or what people say ought to be happening). Participant observation leading to ethnographic description is a time-consuming process when compared with other techniques (like systematic observation or interviewing of random samples), but it can be successfully combined with such techniques for eliciting data. (For a source arguing the importance of such combinations see Gumpert and Harrington, in press.) Of course, within that shared orientation to enthnography, each subfield has developed specific, more specialized ancillary methods in response to the problems each has chosen to solve. For example, psychological anthropology has emphasized the importance of the systematic observation and recording of data, the collection of life and family histories, the use of adaptations of psychological techniques of personality measurement, and the analysis of "cultural products" as clues to learning and cognition, while symbolic anthropology has focused on content analysis of textual and ritual materials. However, participant observation remains central in anthropological approaches to education because of its implicitly holistic stance.

Anthropologists examine educational phenomena in a cross-cultural framework as part of their study of what Chase calls "contemporary man": everyone alive on earth. As such, anthropologists are not content with what so much mainstream psychology, especially experimental psychology, often seems to be: the psychology of one hundred undergraduates at a large midwestern university. Although many educators have become aware of the necessity of broadening their subject base, the mainstream of the discipline is still culture bound. Even comparative education is largely limited to Western European (influenced) cultures and therefore less likely to focus on purely cultural as opposed to economic or political variables. When studies of education in our own society do occur in anthropology, the discipline requires that such research (at least implicitly) be put into some cross-cultural or cross-ethnic comparative frame.

Culture and Education

The three approaches to culture identified in this chapter are not mutually exclusive, and more than one can be held simultaneously. The first approach sees culture as primary. In this view, culture determines education since education itself is part of culture. Students taking this approach show that the type of education (for example, schooling) is determined by the cultural context in which it is embedded; i.e., some cultures include schools and some don't. Culture is seen to determine the context and the form of education, both what is to be learned and how it is taught. As to the content, it is logically obvious that what is to be taught is culture specific: cultures differ widely in what they expect of their members. As to differences in the pedagogy, Herzog (1962) examined the differences in the distribution of deliberate instruction cross-culturally and concluded that only certain societies have such roles formally institutionalized. When culture is seen as primary, it is the main variable that gives rise not only to education but to all other variables that can be linked to education: affective and cognitive styles, ethnicity, status identity, language, dialect, motivation, aspiration, SES, and social class are all embedded in culture as much as education is. Similarly, they each have secondary effects on each other as they do on teaching and learning. In addition, the sociocultural component of the biosocial differences in sex and gender are also culturally determined. Tryirg to sort out the effect of culture from these variables is impossible since all are part of culture itself, and not separable from it. Culture as a main effect is true largely by definition.

This brings us to the two remaining approaches identified in the first section of this chapter. The second approach is that of culture as a status characteristic; culture is simply a label given to groups of people. "He is a Navajo" is an example of the kind of usage that sees culture as essentially a status category. In this orientation, the effect of the label on others is investigated. That is, when can we tell about the way these children are taught once we know that they are labeled X by their teacher? Studies of the negative treatment of certain culture groups, which show the need for better data about groups (and their heritage), are examples of approaches to culture as a status characteristic. This approach differs from the third approach in that no functional characteristics are attributed to culture per se.

The third approach we have identified seeks to address the functional characteristics of culture that are relevant to teaching and learning. These effects are at a lower level of abstraction than in the first approach, where culture is the whole and education is a part. In the functional approach, culture is seen as made up of many parts, and their interrelationships are examined. It is as if we said: "Approach one is true, but not analytically useful." Let us examine the precise patterns of relationships among the variables, the configuration of which we call culture. Let us also contrast that configuration with the organization of the same variables in another culture. What is uniquely cultural is the covariation of the various parts to form the pattern.

If one defines culture as explicit or implicit patterns of and for *behavior* acquired and transmitted by *symbols*, these are cultural when constituting the distinctive achievement of human groups. Although narrower than some, this definition poses some problems because it would include in its "gestalt" other aspects of diversity that are separately treated in this report: affective styles, cognitive styles, ethnicity, identity, language, dialect, motivation, aspiration, social and economic status, and sociocultural components of difference in sex and gender (and age).

It seems superfluous here to rehearse what is done in more detail in other chapters of this report, so I have focused on what is left of culture *when the main effects of these others are excluded*. The difficulty with this approach is that it may trivialize culture by not leaving it much of the variance. Thus, before you conclude on the basis of my efforts that culture doesn't matter much compared with some of the other variables, you ought to remember that these others are part of culture, but are excluded here. In this sense, if each of the other "cultural" variables examined in this report has its own main-effect influence on education, our approach sees culture as the interaction of the other effects.

Culture is more than the sum of the individual component parts for two reasons: one, parts are highly interrelated (covariation) and these covariations differ from culture to culture in unknown ways, and two, there are interaction effects in which variables A and B together exhibit a stronger effect on education than is true of the sum of their individual effects. The functional characteristics of culture, then, are taken to be these covariance and interaction effects that a holistic rather than a univariate view provides.

This view of culture is synonymous with multivariate analysis. This view of culture will seem strangely artificial to some, but in fact is an older holistic view of culture dressed up in modern statistical language. In the midst of disciplines that seek to assess isolated main effects of particular variables on educational outcomes, the anthropologist must insist on the artificiality of these efforts. His way of expressing this is to talk of culture. But he may ascribe to culture whatever variance is not otherwise explained. Unfortunately, this can equate the important variable culture with a kind of statistical "noise," which is a kind of residual variance our theory is not sharp enough to account for.

What we call culture in this operational conception, then, is what is left of the cultural domain after the other effects have been parcelled out, plus the (holistic) covariation and interaction effects when recombined into a cultural whole.

Propositional Inventory

We now turn to a summary of specific studies concerning the impact of culture on teaching and learning. This propositional inventory has been developed out of the literature reviewed for this chapter.[3] It is presented as a guide to the cognitive map of the researchers in the field. Taken together, the studies represent a direction but not a completed research program. I shall spell out below some next steps that may be fruitful, including the potential of ethnographic research when properly used. The reader is asked not to draw inferences about the potential usefulness of ethnographic research until then. Of course, the propositional inventory is not intended to be complete given the space allotted, but is rather illustrative of the approach to the educational relevance of culture taken by anthropologists.

While, as Jaeger (1965) suggested, the holistic quality of culture and the interrelationship of its parts is an idea traceable to the ideals of Greek culture, it is today a dominant focus within anthropology. We have already said that this conceptualization of culture produces a distinctive anthropological view of education, which is a much broader concept than "schooling" (Malinowski, 1936). Education is seen as the totality of influences which mold the individual as he develops, the total process through which culture is communicated to individuals--a conception not dissimilar to that attributed to Maritain by Keohane (1966). Education is a life-long human activity related to all other activities (Kerber & Smith, 1972). As Nadel stated (1942, p. 388), "all efforts, organized or otherwise, which tend to impart to individuals habitual forms of acting and thinking" must be included within education. As such, education is an important part of culture: it is the tool for helping man to adapt to his sociocultural environment (Cohen, 1971).

Such a view could see education as having both creative and conforming aspects, but the latter is seen as preeminent in anthropological description. Education is seen as synonymous with socialization, the process by which cultures ensure their continuation from generation to generation. As Nadel pointed out, "every social institution involves education activities by means of which individuals are led to acquire the behavior patterns that make up the institution" (1942, p. 388). However, there is some recognition in the literature that education is not only an agent for cultural conformity, but for creativity and change as well (e.g., Cohen, 1970; Tyler, 1969). This is particularly true when education takes place where cultures are in contact. Thus schools can be agents for change and acculturation to a new way of life (Redfield, 1943). In such situations, education can be seen not only as a channel for the continuation of a culture but also as an agency for certain types of change (see e.g., Reichel-Dolmatoff, 1961).

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[3] The literature was selected in the following ways: first, the classic works on anthropology and education were consulted for relevant material; second, a computer search of the ERIC data base was performed that made use of more than one hundred relevant index terms from the Thesaurus of ERIC Descriptors.

Such acculturation situations have commanded much attention from anthropologists of education. Much of this work has been embedded in an applied context, in which anthropologists have given advice about how to structure schools in such situations. There are a number of trends to this advice. The first centers on the anthropological conviction that the indigenous educational methods are good at what they do--by definition--or the culture would not have survived to the present (Ipaye, 1969). This leads to advice like that given by Read (1951), who stated that indigenous educational methods should be studied as a guide to educational planning and innovation (see also Mathur, 1970, and Ronceray, 1971). Walker (1969), Farine (1969), and Mayhew (1926) made the same point for indigenous cultural beliefs and patterns. As Williams (1935) paternalistically remarked, native values must be "blended" in when introducing a new culture. Failure to take indigenous forms into account is said to lead to school failure (Havighurst, 1957), rejection (Morgan, 1971), and even psychopathology and suicide (Morgan, 1971).

Such discussions lead to issues directly relating to how educational systems should change. Not surprisingly, we are told that changes in education must be integrated with local cultural values to be successful (Hunter, 1968). This is consistent with the placement of education within the culture described earlier, and represents an extension of that view which argues that cultural factors influence rates of change as well as conformity (see Henry, 1955; Irvine & Sanders, 1972). McHarg (1962) went so far as to say that culture change cannot be imposed when it is contrary to the sanctions of custom, but most authors would agree that changes in the dynamics of education must take into account their potential social as well as educational impact (Dave, 1974); e.g., the view that traditional values can prevent children from seeking more formal education than their parents had (Covello, 1967). The embedding of educational systems within culture leads most authors to agree that to be effective in changing schools you must first change the society (see Faure, 1973). Education is seen as facilitative of fundamental change, but not itself independently causing it. Thus discussions about educational change cannot be separated from culture change.

Specific studies have been conducted examining relationships between culture and specific teaching and pedagogic techniques. Methods of teaching vary from culture to culture (Reichard, 1938; Herzog, 1962), and so a knowledge of a culture's educative style is necessary for a prospective teacher. In this sense, anthropology is itself important to teacher training in today's highly acculturated world (see Brameld, 1957; Landes, 1963, 1965). Teachers must also understand community cultural norms, values, and attitudes toward teachers (Hawthorn, Belshaw, & Jamieson, 1960; G. Hendricks, 1971). A corollary is that teachers should know their own culture to understand how it differs from the culture of their students (Musgrove, 1953).

Robert Redfield went so far as to say that pedagogy that is external to the basic culture is ineffective (1943/1976). A similar point was made for curriculum by Brameld (1957), who thought that the concept of culture is basic to curriculum planning. In this context, it is understandable that to Margolin (1974) sociocultural factors should influence curriculum decisions more than psychological factors. For a long time it has been recognized that curriculum must be adapted to local needs (see Junod, 1939). Failure to do so leads to value conflicts and educational problems (Kim, 1972) and can be shown to affect learning (Hill, 1964). It follows that an enlargement of the cultural base (by including more than one culture) affects both the content and the methods of teaching (Henry, 1955), as well as cultural change.

Students of culture and education often see educational systems in political terms (Bruner, 1968; Dumont, 1966; Harrington, 1973; G. Hendricks, 1973; and Lee, 1963). Redfield (1947/1964) was to argue that understanding other cultures can help us understand our own, just as earlier we heard that understanding of another culture was likely to improve teaching techniques. Often, however, people in multicultural education have assumed that teacher understanding of children's culture will limit denigration of student self-image, and thereby enhance the child's learning. Henry thought not only that hostility to other cultures is a crucial element in any culture, but also that the student's own culture may impair his self-image. He focused attention on the fact that while we may have a myth about each child's attaining his or her own potential or developing creativity, this is not what really happens in schools. As Henry (1965) suggested,

> Throughout history the cultural pattern has been a device for binding the intellect. (p. 284)

> Since education is always against some things and for others, it bears the burden of the cultural obsessions. While the Old Testament extols without cease the glory of the One God, it speaks with equal emphasis against the gods of the Philistines; while the children of the Dakota Indians learned loyalty to their own tribe, they learned to hate the Crow; and while our children are taught to love our American democracy, they are taught contempt for totalitarian regimes. (pp. 285-286)

Another proposition found in the literature but not yet reviewed is the extension of the culture analogy to childhood itself. Thus, Burton has argued the need to examine the culture of childhood, characteristics of children's behavior which hold true across cultural groups. As Burton (1978) phrased it:

> An anthropology of the young must be based in ethnographic method. To study the lives of children one must spend time in the field, building descriptions of the cultural situation that are as complete as possible. This may be a truism, but it is one that is seldom followed with regard to the young. Studies of young people have typically been carried out by social scientists who began with something in mind: the study of reasoning process, the interpretation of dreams, the sociometry of street corners. We must inevitably have "something in mind" and cannot help limiting our depth of field. But it is the essence of the anthropological method, surely, to reach for a view of the cultural situation as a whole and to form a full description as the proper basis for analysis. (p. 59)

These propositions show how the anthropological orientations above have been extended into our study of the relationship to education. The broad definition of education leads to propositions that emphasize the holistic view of education as a primary life-long activity embedded in the requirements of a particular sociocultural system that provides individuals with ready-made adaptations to environmental and social pressures. Although it is recognized that education acts in both conservative and innovative ways, the thrust of education is clearly seen as culturally conservative: education is primarily an agent of cultural conformity. Most examples of education as a vehicle for change are dealing with situations in which two or more cultures are in contact, and a new culture gets control of the educational system with the explicit goal of changing the older cultures. Examples of such efforts come from colonial situations as well as models of transitional bilingual education closer to home. There is a pattern in the literature suggesting that attempts to change indigenous cultures and their institutions are fraught with difficulty and likely to fail, except where the indigenous system is to some degree co-opted. The studies show furthermore that schools are not a good place to put one's lever for changing a culture. Schools follow or reflect a culture rather than lead it. An implication of this is that social reformers who use schools as a vehicle for changing the larger society are likely to fail in their more ambitious goal . . . although they may well appear to have changed schools.

Differentiations, Boundaries, and Limitations

As we have seen, the most basic lesson that the anthropologist teaches about pedagogy is that it is itself part of culture. Education is the explicit acquisition (learning) and transmission (teaching) of patterns of behavior through symbols. As a part of culture, education may be seen as both a product of prior action and an influence upon further action. Some may argue that the difference between culture and education is that culture includes much that education leaves out. This is true, but it is also true that education cannot really be separated out of culture because pedagogy is determined by cultural variables.

This point of view is best exemplified by the work of the Whitings (cf. Whiting & Child, 1953). The mode of education, or child training practices in the Whitings' model, is seen as arising in any particular culture setting from the maintenance systems of the particular culture. To say this is to emphasize two points: (a) that any study of "education" that does not take into account its cultural context is incomplete, and (b) that since maintenance systems give rise to education more than vice versa, educational systems are not a useful point at which to initiate change. This view becomes crucial in an examination of much of the recent literature on education. To criticize the schools for their failures, and to demand change, overloads the functions and interrelationships that the schools serve and have within the larger society. This is not to say that abuses in schools cannot be corrected or that reform is impossible. It is to say that for change to occur (as opposed to reform), a change in the society (maintenance systems) is prerequisite to change in educational structures. Wallace (1956) made a point similar to the Whiting model by emphasizing that the goal of schools will be different in what he calls conservative, reactionary, and revolutionary societies, in which the type of society determines the type of schooling and not vice versa. The advantage of Whiting's formulation for educators is that it includes all education, not just schooling, in its scope. Thus, Herzog (1962) was able to show that the type of instruction (whether deliberate or not, whether done by kin or not) varied by household type and type of society.

This study provides empirical support for two points: (a) that type of education is determined by type of society and (b) that types (e.g., deliberate instruction) must be considered in the total context of child training practices of a society and not as synonymous with them.

Maintenance systems are described by Whiting and Child (1953) as the "economic, political, and social organizations of a society surrounding the nourishment, sheltering and protection of its members." From structural anthropology (both the British and American versions) come working models and actual descriptions of maintenance systems. Examples of maintenance systems from the following sections include household composition, sexual division of labor, and residence patterns. Child training practices, in the broadest sense, are what is done to the child to bring about the behavior necessary for social life. Implicit in the term child training is some intent on the part of the parent or surrogate, as well as some goal presumably defined by the culture. Schools, the fact that initial child training is done by women, and initiation rites are examples of child training practices. Personality is the model of what the individual assimilates and of how he organizes what happens to him. In a sense, personality may be conceptualized as an individual's adaptation to his socialization. Here the study of socialization depends upon psychological anthropologists and, through them, upon the field of psychology itself, so that personality can be expressed in terms of measured variables. Sex identity is this type of variable. Cultural products include religion, cultural values, art, games, or any other cultural features not immediately and practically involved in the satisfaction of basic biological needs. In the study of male initiation rites, the value of male solidarity would be an example, as well as the symbolic content of the initiation rites themselves.

Many psychological anthropologists would argue over fine points, but most would agree that education can only be studied as part of an overall socialization process designed to meet goals specific to the culture examined. (See Harrington and Whiting (1972) and Harrington (1979) for a review of the literature supporting the Whiting model.)

Recent work in Africa by J. Whiting and B. Whiting provides an interesting example. In Kenya, schooling has spread since the Whitings' earlier research in collaboration with R. Levine and B. Levine (1966). In that research an important determinant of the development of altruistic behavior in the growing child was found to be the responsibility for the

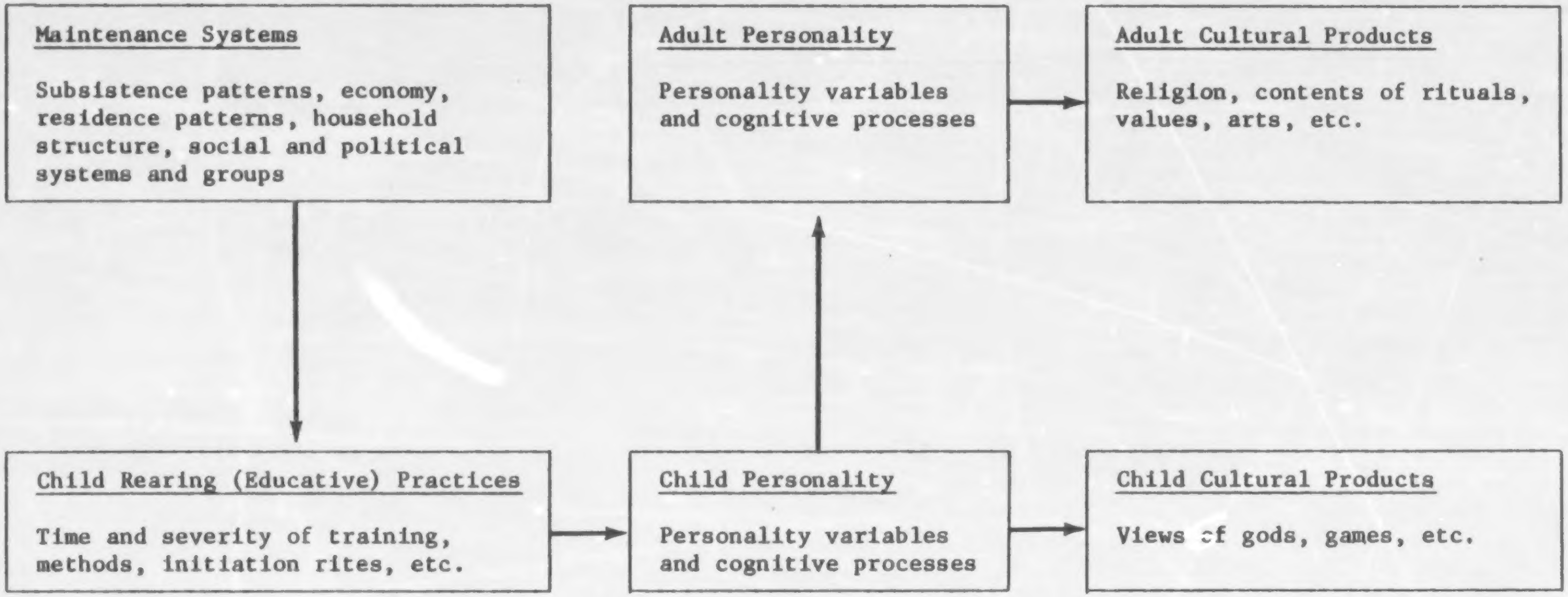
Maintenance Systems
Subsistence patterns, economy, residence patterns, household structure, social and political systems and groups
Adult Personality
Personality variables and cognitive processes
Adult Cultural Products
Religion, contents of rituals, values, arts, etc.
Child Rearing (Educative) Practices
Time and severity of training, methods, initiation rites, etc.
Child Personality
Personality variables and cognitive processes
Child Cultural Products
Views of gods, games, etc.

Figure 1. The Whiting Model

care of younger siblings. This also had the effect of taking some of the burdens of child care away from the mother, and enabling her to assume other role responsibilities within the household. With the spread of schools, the 8- to 11-year-old children are no longer in the households during the day. This has two chief results: a drastic reduction in the amount of time spent in developing altruistic behavior in the children, and a drastic increase in child care responsibilities for the women who, Whiting observed, were "going crazy" trying to do everything (J. Whiting, Note 1). One can anticipate certain fundamental changes in personality and family interaction patterns as a result of schooling--which, of course, were not necessarily planned by those who created the schools to begin with. As Whiting remarked on another occasion, it may be difficult to demonstrate that rural schools in less developed countries teach anything, but it is easy to demonstrate that they keep children from learning the traditional culture by taking them away from it for significant periods of time each day.

To sum up the differences between culture and education, we see education as a vehicle, a procedure, an acquisitive process, whereas culture is conditional, concerned with content, values, and is directional. Culture is inclusive in the sense of providing content and context within which education occurs.

Cross-cultural differences are great enough to demonstrate the dominance of culture in determining what is taught/learned, and how. The situation is the same when dealing with variation within cultures, but harder to see with precision. Within American society, educational problems of a minority group have been attributed to the distinctive cultural background of the group. Such a position is supported and exemplified by the research reported by Ramírez and Castañeda (1974). They examined the cultural factors that may affect the academic performance of Mexican American children. They note that Mexican American students characteristically have a cultural background stressing the importance of family and community, a strong sense of ethnicity, respect for authority, and a need for close personal relationships. These cultural values come into conflict with those promoted by the educational system, which encourages independence and competition. The difficulties of Mexican American students are, in part, attributed to this conflict between the field-sensitive values of Mexican American culture and the field-independent values of the "mainstream." But the conflict is more than merely cultural: it is also pedagogic. They argue that their cultural heritage provides Mexican American stdents with field-sensitive learning styles, whereas Anglo teachers have field-independent teaching styles. The clash between traditional learning styles and the Anglo teaching styles places the Mexican American children at a disadvantage. Ramiréz and Castañeda recommended building into the curriculum field-sensitive teaching styles that can match field-sensitive learning styles. It is also said to be important to get children who are field-sensitive to be better able to function in field-independent learning situations since the latter are important within mainstream socioeconomic systems in later life. In this study the pedagogical relevance of culture is directly addressed, and a strong argument is made for it. However, there are two major limitations to the position being argued. One is a false homogeneity that can be attributed to "Mexican American culture." Are all peoples labeled as Mexican Americans field-dependent? Probably not. Are those that are more culturally pure? Only if our reasoning becomes circular.[4]

The second problem is more likely to be addressed in other chapters in this report on Human Diversity. The source of educational problems of minority children is incredibly difficult to determine. A number of factors affect the learning process; cultural background is only one. For example, compare the Ramiréz and Castañeda study with John Ogbu's (1974) study of school failure in Stockton, California. Ogbu "explains" the school failure of Mexican American students without mention of the cultural values discussed by Ramiréz and Castañeda. Instead, Ogbu focuses on the social stratification of the larger society. He argues that in a society in which populations like Mexican Americans and blacks are treated as lower "castes" without economic or political equality, school children lower their level of effort in a realistic and logical consequence of their perception that for the same level of effort they will receive lower levels of reward than the white children next to them later in life. (Note that in this study there is a danger of homogenizing by "caste" position.)

Both of these studies account for the educational problems, but one sees culture and the other sees stratification as the primary contributing factor. Of course, both factors may be operating. Different aspects of a reality may have been revealed. But Ogbu's study is a useful reminder that in discussing the pedagogical relevance of culture, the economic and political realities of the present may not be forgotten. It is also possible, moreover, that the importance of the cultural variables may be increased by a social stratification that discriminates against such people. As Allport indicated many years ago (1954), discrimination may lead to a stronger cultural identity for the group being threatened. This produces a spiral effect in which that group more strongly embraces that which is negatively valued by the "mainstream," and thereby postpones not only cultural assimilation but economic incorporation as well. Similar caution should be exercised in discussing culture separate from other domains discussed in this report.

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[4] Note that there is a similar problem with the concept of mainstream culture. Here, a false homogenization has occurred that produces something labeled mainstream that has almost no substantiation available for it. Granted the existence of certain institutions that can be seen to have an effect nation wide (the government, McDonald's, etc.), it is a far cry from the utilization of such institutions to an ascription of culture. Mainstream culture is only an ascriptive label, it has no functional characteristics that can be related to education or anything else.

Functional Characteristics of Culture

The capacity of culture for change begins with an examination of the way in which cultures change, and the related issue of how cultures react to attempted change.

Change comes to culture through two sources, internal and external. Internally generated change is actually rare, but this definition distinguishes between growth and change. In the 1920s Bunzel did field work in the American southwest and in her book, The Pueblo Potter (1929), recalls her first introduction to native American art. She could see no recognizable differences among pots, but the local potters could instantly identify each one as the work of a particular potter. After years of field work, Bunzel found that she could also identify the differences. The relevance of this anecdote is to help us understand the anthropologist's difference in meaning between growth--internal elaboration--and change. Bunzel's first reaction to a new culture (style) was such that the differences from her own culture were so great that they obscured individual differences or variation in the style. As she gained familiarity with the new style, she could recognize the original individual's application of the style. Thus, as individual potters elaborate and create works of art within a stylistic convention, they are carrying out a process analogous to our concept of growth. Over time these individual differences result in evolutionary changes in the style of the work. This is a separate process from the introduction (through culture contact, for example) of a new style in which the change may be said to be revolutionary, rather than evolutionary. This second, more fundamental process, is what anthropologists would label change. All societies undergo small shifts through the first process. The second process is historically both more rare, and also more easily observed. The first results in slow elaboration or growth, the second in the more rapid change.

By internal change, anthropologists mean revolutionary change brought about in response to internal pressures of dissension within a society that are not caused or influenced by members of other cultures. This kind of indigenous change is best exemplified by the concept of revitalization movement as introduced by the anthropologist Wallace

(1956). To Wallace, the pressures faced by a particular culture to maintain specific cultural styles or forms at certain points is exceeded by countervailing pressures on certain members of that culture to break up the existing forms and substitute others. Such efforts at introducing a new style within a culture may or may not succeed. The social movement fostering change may be overwhelmed by the stabilizing forces of the culture. Those movements that succeed Wallace labeled as revitalization efforts aimed at creating a new stability that would more adequately meet the needs of its members than the old form would.

Such revitalization movements contain three discrete phases: The first is a withdrawal from the older society form, the second is a transitional or liminal phase in which new forms are pondered, promulgated, and fostered, and the third and final phase is one in which the new form replaces the old and becomes the new steady state. Wallace's formulation is carried to a further level of analysis by Turner (1969), who stated that this process of periodic renewal is an essential part of social life and is itself linked to a dynamic process of dialectic between steady societal forms and liminal or status-free periods that separate them. The changes brought about by revitalization forces are not thought of as internal elaborations or growth by Wallace, however, but as representing the only available route to internally generated change.

Far more common than internally generated change is that which is brought about by acculturation--contact with other cultures. Public press accounts to the contrary, acculturation is the normal societal condition. All cultures are to some degree in contact with other cultures, although the degree to which contact, or its consequences, can be minimized varies greatly. There is an enormously rich literature in anthropology showing the effects of acculturation on North American and African cultures long before the arrival of white men on either continent. This literature addresses itself to the role of culture contact in change. It shows that culture contact can lead to incorporative types of culture change in which cultures adopt certain features of others, but into existing cultural patterns--a better way of making mocassins for example--or much more fundamental kinds of change in which the culture's relationships to the environment are severely affected--e.g., the introduction of the snowmobile in Eskimo culture (Pelto & Muller-Wille, 1972). When this process is carried to extreme forms, a culture may be completely assimilated into another and lose its identity. In culture contact situations, then, the following models represent the options. A culture can "decide" to change or conserve. If the "decision" is to change, it can incorporate elements and fuse them into their new form, or it can be assimilated and lose its own identity. If it "decides" to conserve, the outcome is largely dependent upon the willingness of the other party to allow the conservation. If so, a kind of isolation situation develops in which minimal contact occurs; if not, the stronger culture may try to wipe out the other. Both the North American and African literatures offer many examples of these processes.

Cultures in general are very resistant to change, as we have defined it, but very open to growth or internal elaboration processes that we distinguished from it. In situations in which change is being promoted, either from within or without, the interrelatedness or holistic nature of culture is itself a most powerful force against change. It usually requires more energy to change than to stay the same. Change occurs when cost ratios are reversed. In Wallace's terms, if the society is spending more energy containing a social movement than it would take to adapt to it, change occurs. In culture contact, when a culture is so distorted by the effort to resist influence from outside, giving in to change becomes predictable. Most cultures probably bring change with incorporation as the model; because of the interrelatedness of cultural parts, the process, once begun, sometimes becomes irreversibly assimilative in form. Since this could mean the end of the culture, enormous energies could be expended to prevent this outcome.

Functional Versus Stereotypical Aspects of Culture

The review of the literature in the Propositional Inventory section showed schools to be mainly conserving, but occasionally to serve the processes of change. We examine here the difficulties that the literature reports of changing cultural variables through schools. Research published by Rohner (1965) is typical of how these approaches can confuse functional aspects with status characteristics. Rohner sought to identify the factors influencing the poor academic performance of Kwakiutl children as compared with that of Anglo children in Provincial schools of British Columbia. (When will we get studies of the factors leading to good academic performance among blacks, Hispanics, or native Americans?) Rohner stressed the fact that the chief elements are those that relate to the discrepancy between the traditional culture and formal education. First of all he states that Kwakiutl culture and the Anglo culture schools value time differently. Time units are important in school, as is "being on time." Time units are unimportant in Kwakiutl culture. Schools value and reward compliance, whereas traditional culture values and rewards independence and assertiveness. He remarks that further discrepancies are associated with skills required in school and with the skills of the traditional culture. Schools are formal institutions with formal structures and relationships, but Kawkiutl culture's institutions are characterized as informal. Furthermore, discipline is different. Schools are authoritarian; traditional culture is described as permissive. Reminiscent of Ramiréz and Castañeda, methods of learning also are said to be different. In Kwakiutl culture, children learn by direct observation and experience, but in schools, learning is mediated through language. In addition, the language in the schools is different from that at home. Other discrepancies are caused by the fact that school teachers represent cultures other than Kwakiutl, and tend to value local cultures negatively. Finally, the high turnover of teachers results, it is said, in the fact that the teacher is and will always be a stranger to the ways of the people.

An alternative to Rohner's stereotypes views the failure of schools as deliberate not because educators are ignorant of the other cultures, but rather (reminiscent of Cubberly) because they are open and antagonistic. It was stated above that education is a political act. Indeed, it has been alleged that the role of the school is to provide socially stratified adults in accordance with the economic and political requirements of the system as a whole. McDermott's (1978) analysis of this process is illustrative of this position.

> Basically, we suggest that American schools are designed to produce and stratify differences in the intellectual achievements of different children. Culture can be taken as a set of interrelated propositions about the world, propositions which the members of the culture consistently use with (and on) each other in the demonstration (and enforcement) of the common sensibility of their own behavior (D'Andrade, 1976; Murphy, 1971). In America, at the core of the propositions that make up our cultural resources for dealing with one another are evaluations of the worth and potential of persons on the basis of their supposed natural, inherited, and unalterable intellectual abilities. (Henry, 1963; Spindler, 1959)
>
> In American culture, however, our preoccupation with locating the natural intellectual skills of our children is so great that we accept the flimsiest of evidence during the first days of school. When we have categorized the children as more or less able, we then by way of self-fulfilling prophecies, arrange to have the children designated as less able actually accomplish less than the others. Thus the school must have its failures, whatever the long-range potentialities of the children who are to be sorted out. Our communities and our economy demand such variation. If our schools were completely fair, we suspect that there still would

> be differential achievement because of the children's different experiences in the social world both within and beyond the classroom. Ideally, such different achievement is recognized across subject matter rather than across children. However . . . we have organized our schools to sort children into achievers and nonachievers and that is what we get. If we organized our schools for the normally rich development of all our children, we could get something quite different. (McDermott & Aron, 1978, p. 44)

McDermott is, however, less clear as to how we might accomplish this organization of our schools. This is regrettable since much of the literature would imply that schools are as resistant to change as cultures are. Since schools are embedded in culture, this is not surprising.

Approaches to Assessment of Culture

Anthropological approaches to the assessment of culture center on participant observation and ethnographic techniques that emphasize the importance of complete description and recording prior to analysis. Similarly, the assessment of the relevance of culture to educational variables must be carefully described. An important aspect of this is not to let our own cultural definitions intrude upon or determine our analysis. Too often students of education go to other cultures in search of "schools" for children that they can compare with our own schools. Not all cultures have schools, but all have education. The work of Fortes is an example of the truly anthropological approach applied to culture and education.

Fortes (1938/1970) provided a rich description of education among the Tallensi. Their process of education is understandable only if one recognizes that no division is made between the social spheres of adult and child. In many societies, our own for example, a child's feeling, thinking, and acting relate to a different reality from that of adults, although occasionally overlapping with it. The dichotomy is expressed in custom, and comes out in the "folk psychology" of the group. Among the Tallensi, however, the spheres are not differentiated and are distinguished only in terms of "relative capacity" (Fortes, 1938/ 1970, p. 18). Tallensi participate in the same reality, but in varying degrees. Nothing of adult behavior is hidden or separate from children, who are active and responsible members of the social, economic, ritual, and ideological systems. The educational consequences are profound; the effect on psychology equally great.

> The interests, motives, and purposes of children are identical with those of adults, but at a simpler level of organization. Hence the children need not be coerced to take a share in economic and social activities. They are eager to do so. (1938, p. 19)

> The educational development of a Tale child may be regarded as the gradual acquisition of an ensemble of interests, observances and skills. (p. 32)

> Learning and teaching is a composite process, a network of interacting factors. (p. 32)

Note the following anecdotes:

> An infant beginning to walk is supported for a bit, now and then, by an older child, or a parent, or any one to whose care it happens to be entrusted. There is no such thing as regular training in these skills. (p. 34)

> Growing up is the evolution of one's social personality as it approximates closer and closer to the fully grown, mature adult. Just as this point of view precludes deliberate and standardized methods of training children in the rudimentary bodily skills such as walking, talking, and eye-hand coordination in eating, so it would be incompatible with a didactic attitude about bowel and bladder control or about sexual habits and knowledge. (p. 35)

> I was walking with Samane and his two small sons (8-9 years) across a recently sown field of early millet already a few inches high. I chanced to tread on a shoot. Immediately one of the small boys stopped and carefully raised and replanted the blade of millet. "Why did you do that?" I asked. "Don't you know that is our food?" he replied reproachfully. (p. 20)

The expectation of normal behavior is an important factor in Tale education. In contrast with this, many Western mothers do not expect their children to acquire normal behavior as a matter of course, but set out to train them from earliest infancy. Among the Tale, however, since normal behavior is expected, no one hesitates to correct a child or adult who behaves inappropriately through ignorance, and the correction is accepted with ease. Although it is known that some people learn more easily than others or that variations in skills exist, no technique of isolating a skill and training for it exists. Tale education exists as individuals experience situations, and adults and children share the same social reality—to the extent that their previous situations make it possible. Learning is by participant observation, not drill. No curricula exist independent of the ongoing social reality. Tale say children learn by looking and doing through imitation, identification (with parents and sibs), cooperation (in tasks--again real), as well as through play.

The concept of play is well developed among the Tale, whatever one might expect from the above. However, it is in the play that

> the child rehearses his interests, skills, and obligations, and makes experiments in social living without having to pay the penalty for mistakes. (p. 59)

This is reminiscent of Isaacs (1930, pp. 99-102) and Harrington (1973), who make cross-cultural arguments for the practice function of peer-group play.

Fortes' study makes clear the futility of creating one approach to the assessment of culture's relevance for teaching and learning. What is needed is a specification of particular aspects of learning and teaching with which we are to deal. Then a more limited classification of cultural variables can be accomplished. The key to such a task is a finely grained ethnography that enables one to avoid sweeping stereotypes.

The reader should keep in mind that it is the position in the discussion above that is being attacked rather than the particular author. Three approaches to culture and learning have been discussed. In the example just cited, Fortes was dealing with culture as a domain and as a functional characteristic. In the example which follows, Nadel did the same; whereas Burger, trying to deal with culture as a functional characteristic, treated it instead as a status characteristic.

Nadel (1942) offered an appropriately detailed description of the two principal educational institutions of the Nupe, a Muslim kingdom in central Nigeria. These are the Koran school (Mallam), which is concerned with Muslim religious teaching, and the age grade associations (zoon politikon). The discussion centered in the complementarity of the two systems and also with how, between them, they comprise the citizenship education of the society.

The Koran school is a system in which individuals who have acquired knowledge of Arabic and the Koran act as teachers in Koran schools. A school usually consists of one teacher and sometimes as few as one pupil. The Mallam may not be paid for imparting his religious knowledge. The poorer depend upon alms and tips. Koran learning begins at age 5-6 and continues into adulthood. While some Mallam are wealthy and many are not, their common feature is that of a life without manual work, and a social status higher than that of the common laborer. Mallam is the only Nupe profession not motivated by material ends. People will sacrifice even the security of land, of the meager and insecure income that goes with Mallam, for the sake of the rise in status accorded the leisure class.

Age grades are local associations limited to about 30 members. They continue into adulthood, and are hierarchically organized by types according to age. Age grades crosscut, yet parallel, other social and political groupings. They counter the separatist tendencies of individuals in groups and sustain the large scale integration on which the existence of the village as a social unit depends.

> The Mallam school offers promotion to one social plane, the age grade association practices promotion in the framework of a complex scale of steps and grades. The promotion afforded by religious education is "real" in the sense that it involves social privileges in adult life; that practiced in the age grades is fictitious, even vicarious, and concerns mental readiness rather than concrete achievement. (p. 205)

Nadel's point is that culture is not just relevant to an understanding of learning and teaching, but that teaching and learning are microcosms of the culture itself.

An alternative view breaks culture up into cross-culturally useful categories rather than native categories like Mallam. By so doing, the relevance of these aspects of culture can be comparatively assessed; e.g., parents, peers, or schools (see Harrington, 1973). However, there can be dangers in returning to the level of description of particular cultures; gross stereotyping and oversimiplification. As an example, the work of Burger (1973) distinguished eight domains in which cultural differences occur that have direct relevance for teaching and learning: cognition, affect, psychomotion, communication (language), time, social organization, attitudes toward human nature, and a sense of environmental control. Although it is not clear why these are chosen and others excluded, a search for cultural differences across such a range requires much oversimplification to make it work. The basic flaw is in the lack of ethnographic detail for the culture described.

The main thrust of Burger's work was to examine the relevance of these cultural domains for understanding education in the United States. However, functional characteristics quickly take on, instead, fixed status characteristics. Burger discussed the first three domains in terms of their relative importance. In this way stereotypes are created: "Anglo culture" emphasizes cognition at the expense of affect and psychomotion when compared with "other cultures." He quoted M. L. Wax and R. Wax as saying that Anglos expect school to produce a human being who is "abstract, theoretical, rational, and hence deracinated--the academic man writ large" (Wax & Wax, 1968). No other evidence is provided for these assertions. "Other cultures" is never further specified, but in the article becomes synonymous with "certain minority groups" in the United States society. These groups, it is implied, place more emphasis on affect and psychomotion. This leads to advice such as:

> The (school) teacher must be willing to be emotional toward the minority child more often than toward an Anglo child. (p. 10)
>
> Teacher should increase affective and psychomotoric parts of education, whether by adding separate periods (devoted, say, to dance), or by incorporating them with cognition. (p. 11)

I do not know how all minority cultures came to be swept into these gross generalizations. Certainly many of the European groups seem inadequately reckoned with. Similarly, a confusion of all native American peoples, all Mexican Americans, blacks, Caribbean migrants, etc., cannot help but impede cultural pluralism.[5]

Having brought this kind of obfuscation from the larger society to what should have been a professional disciplined discussion, Burger turned to the next variable, communication, by which he means language. We are told that "ethnic differences" in communication show themselves in a variety of ways, including dialects, gestures, vocabulary, the social context of language, and bilingualism. Burger attacked the mainstream position that English is synonymous with American. He stated that 11% of the population are native speakers of European languages other than English (the same people so bizarrely treated in his discussion on cognition!), and that an even larger percentage (not specified) "hear a non-English tongue at home" (p. 13). He then quoted Margaret Mead to support the position that true literacy can only be obtained in one's mother tongue (quite literally defined as the language in which their mother sang them to sleep). According to Burger, using the mother tongue offers rich opportunities for motivating children. This discussion seems extremely shallow given the richness of the literature in linguistics and bilingual education, but we leave it to another chapter in this series to review that literature.

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[5] This is in line with the research of Dolgin who described the increasing interchangeability of the ethnic minority, thereby making it feasible to ignore the reality of the different groups and rather to deal with a simplified and anonymous "ethnic." This reduces the power of various groups, makes problems invisible, and generally reinforces the conservatism of the status quo. (Dolgin, 1977)

Burger's discussion of time is about something called Latin time (which he somehow extends to all "non-complex culture" groups). This discussion concludes with the singular advice to the teacher that if she has an appointment to see the parent of a "non-complex culture" school child, "She [sic] should bring reading material so that she will not be angry if the other person arrives, say 25 minutes late."

The discussion of social organization is replete with yet more stereotypes. "The Anglo social organization minimizes family and kin, and substitutes 'rational' or 'instrumental' associations, such as fellow members of one's profession. By contrast, most other cultures enlarge their social organization via kinship" (p. 15). We are told that when an Hispanic child (now typifying all children from "simple cultures") enters the classroom the teacher "must encourage such child to sit by his kin as [sic] friends, rather than by assigning a seat to him arbitrarily" (p. 15).

In Burger's conceptions of human nature, cultures appear to differ as to whether they believe human nature to be basically good. For Burger, this has consequences for the amount of latitude allowed children. Teachers are told to "be sensitive" to such differences. Burger's work, instead of fostering an understanding of the functional characteristics of culture, presents us with stereotype after stereotype that lead the reader to believe that status characteristics are inevitably linked to functional characteristics.

In reviewing a wide range of literature on a number of cultural variables as they relate to processes of schooling, it would be a serious misunderstanding if information about various groups were used to construct yet more stereotypes, however refined, as Burger has done. The reader should remember that regardless of how much a child may be like other children because of sharing a culture, there are still ways in which he/she is like all other children regardless of culture. That is, he/she is still human, able to learn, able to think, and able to feel. The cultural differences we have been describing are small compared with these. (See Cole, Gay, Glick, & Sharp, 1971, for a detailed discussion of what anthropologists call the cognitive unity of mankind.)

A particular child is like other children in many ways, and knowing something about the culture from which a child comes does not relieve an educator from an additional obligation to know the child as a unique individual and to respond to the needs of that child. The detailed information about culture and how to gather it described earlier in this chapter is, I think, important and valuable for educators to have, but it is not the only information that they need in planning their actions.

Implications for Design of Learning Experiences

In a classroom at any level from preschool through college, cultural and ethnic identity are not merely matters to be taught as subjects or disciplines, but are, more important, living ways of communicating and relating, or of thinking and feeling. By fostering programs that explicitly and implicitly help children to develop such identity, one encourages them to contribute to and to perform positively within familiar styles of interaction and language. For social and emotional growth, the child requires an environment in which his or her cultural background, as well as those around him/her, are understood and accepted, an environment in which he or she can participate within the framework of familiar concepts and social expectations. To provide otherwise is to risk withdrawal and alienation on the part of the child. Furthermore, at a time when most of the pupil's activities continue to be home and community centered, a program that takes into account the child's cultural and linguistic background permits him/her to continue to acquire knowledge about the home culture, and makes it less difficult for the parents to contribute to the child's education at home. Such a mesh between school, home, and community must be encouraged by all.

Various theories in psychology and anthropology tell us that parents, relatives, and others in close contact with a child serve as role models (see Harrington, 1970). If there is a sharp difference between the model presented at the school and the model presented in the home and in the community, there will be a discontinuity in the experiences of the child and possible confusion about social relationships and expectations. On the other hand, if, through a bilingual-multicultural approach, parents and staff members from the same and/or a different cultural background as the child's participate in the school in positive ways (instead of being introduced by teachers as stereotypes), then the child is much more likely to be able to continue his or her identification patterns while observing and slowly adopting new forms of interaction and behavior. Of course, an added advantage is that parents are not only able to identify with and support that school program, but are also able to observe the instructional and relational techniques being used in the school to foster the growth and development of their children.

"Bilingual education" is the use of two languages (the student's first language and English) as media of instruction. In defining "multicultural education," we follow the American Association of Colleges for Teacher Education 1973 conceptualization of multicultural education: "Multicultural education is (instruction) which values . . . pluralism. . . . Multicultural education affirms that schools should be oriented toward the cultural enrichment of all children and youth through programs rooted to the preservation and extension of cultural alternatives. Multicultural education recognizes cultural diversity as a fact in American society, and it affirms that this cultural diversity is a valuable resource that should be preserved and extended." (p. 264)

Bilingual and multicultural are linked concepts because language and culture are closely linked in the life of each individual. These concepts are, however, not synonymous. Spanish-speaking is a linguistic label, not a cultural one. People who are Spanish-speaking may link their heritages with cultures as diverse as those of Mexico, the Dominican Republic, Spain, Ecuador, Cuba, or Puerto Rico. Furthermore, all of these groups differ on other cultural variables such as rural/urban differences and educational attainment. The curricula must contain bilingual/multicultural materials that depict this diversity within, as well as among, cultures.

Sound education, then, is a program of instruction that consciously uses multicultural values and materials, and structures the activities and the school environment in such a way that the child's multicultural awareness will be positively fostered. Culture should influence pedagogy, not simply because doing so prevents psychological, emotional, and social conflicts in children, but for a very positive reason: it can have positive adaptive value in a culturally-plural society such as that found in the United States.

Cultural pluralism is cultural diversity. It refers to differences brought about by group norms, differences leading to different values and behavioral styles among various cultural groups. In a culturally plural society, group identity is nourished within a framework of overall social and political unity; attempts to minimize group differences and to achieve "melting pot" models are eschewed. Harrington (1978) distinguished cultural pluralism from social stratification that is the differential incorporation (or stratification) of various population categories into the opportunity structure of the society. Thus some groups are prevented from achieving the social and economic status that others are able to achieve. The melting pot has become a myth.

The education of American minority-group children takes place within the context of our stratified society. This feature of American life has consequences for education; for example, Ogbu (1974) argued that black and Mexican American students reduce their efforts in school tasks because of the level of the rewards they expect to receive as adults. We must ask what differences in children we can reasonably expect through our educational innovations, given the everyday reality of growing up in an economically discriminated-against segment of the population. Asking such questions will both prevent us from judging our seeming failures too harshly, and help to sharpen our ideas about what the school can do to mitigate the effects of such negative external forces. Schools cannot offer, nor pretend to offer, a total cure for social stratification. But schools must do a better job than they have been doing, and must not themselves contribute to a reinforcement of social stratification.

Implications of our conceptualization for designing learning environments include the following:

1. We need to increase the diversity of educational environments in order to increase the likelihood that children will find several environments in which they can experiment and successfully function.

2. We need to increase the number and the diversity of educational outcomes sought for assessment as well as the procedures for measuring them.

3. We need to nurture the legitimacy of multiple educational outcomes that foster cultural pluralism without reinforcing social stratification.

4. We must insist on curriculum models, curriculum definitions, teaching materials, and teaching approaches that allow for the examination of what goes on in school as part of a larger context--the rest of the child's life.

What are the specific consequences of this conceptualization for the teaching materials that are part of the curriculum? Before this question can be answered, the idea of a curriculum as a set of facts to be learned or skills to be measured must be considerably revised and broadened. Grannis (1973) has concluded after much research that it is not the instructional content that is the most important learning conveyed in the school; rather, it is the whole structure of the school that teaches students about the nature of our society, their possibilities within the society, and the ways of coping individually or collectively with given constraints. He suggested that the extent of the students' control or lack of control over such aspects of the school as interaction with peers, choice among tasks, options in the methods of fulfilling tasks, and access to feedback from instructional materials will shape students' expectations concerning their ability to control aspects of their own lives outside of the school and in the future. What this means for the development of programming and the selection of relevant learning materials is that content should not supersede process, and that the role of the anthropologist in providing training and technical assistance to educators in the processes of multicultural education is critically important.

Most generally, we have argued that culture must always be taken into account in planning education, since it is the culture that defines what is to be learned and how it is to be learned. All the other aspects of human diversity discussed in this report are themselves linked to culture. Thus culture is primary, and always crucial to an understanding of education. In the more restricted purpose of this chapter, I have examined the more limited definition of culture when the other main effects discussed in this report are excluded. The status and functional characteristics of culture were examined by this definition. I have showed how to identify functional aspects of culture, and have argued that these are likely to be different from culture to culture, and that these aspects of culture require careful and detailed ethnographic analysis. I have commented that cultural status may be acceptably invoked in educational planning in attempts to remediate effects of past--or present--discrimination through differential treatment of pupils on the basis of status characteristics and through cultural heritage programs to improve negative self-images and that, for most educational usages, culture as merely another status characteristic has no place in educational planning. Functional characteristics of culture, when identified through the techniques described above, are found to be important to educational planning in any cross-cultural or multi-cultural setting. However, how educators can achieve the level of sophisticated knowledge called for here about culture without full time recourse to anthropologists is a question not adequately resolved in this chapter.

Reference Note

1. Whiting, J. Comment presented at the meeting of the American Anthropological Association, Los Angeles, 1978.

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CHAPTER 7

Language Diversity, Individual Diversity, and Cultural Diversity: A Review and Critique of Schema Theory As It Applies to Human Communication and Selected Aspects of Language Use

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Schema theory, as a generic term with many differentiations and subclassifications to be noted below, has a long and venerable history in psychology (Abelson, 1975, 1976; Bartlett, 1932; Piaget, 1961, 1965; Rumelhart, 1975), in linguistics (Chafe, 1977; Fillmore, 1976; Tannen, 1979), in anthropology (Agar, 1979; Bateson, 1972; Opler, 1946, 1959; Werner, 1970), in sociology (Goffman, 1974), and in computer science (Schank & Abelson, 1975). The above is but a selective list of references, but its length and diversity address the importance of and need for a set of concepts broad and rich enough to encompass the diversity of human behavior that it is intended to account for. In many ways, the notion of a schema as a large organized gestalt for describing complex behavior in the social/psychological realms has been independently arrived at in several of the above disciplines. Hence the diversity in terminology, which I shall note below, is not surprising. Tannen's (1979) review of this literature is especially clear, and I shall rely upon it especially in tracing the several borrowings that do exist across the disciplines with respect to schema theory.

The variety of concepts in the several disciplines includes such terms as scripts, plans, vignettes, scenes, frames, themes, categorizations, dremes, and modules. Ross (1975) suggests that what underlies each of these many terms is a structure of expectation; that is, from one's experience, one detects regularities in the world, and uses these

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regularities as the basis of a cognitive expectation when facing new events and experiences. Although individuals and communities can be expected to differ in the details that constitute their expectations, there is a recurrent regularity that underlies all these surface differences. This is the ability to discover recurrences, and the ability to remember and use these recurrent patterns as psychological expectations when encountering new events.

Bartlett (1932) borrowed extensively from Head (1920) in discussing the idea of a schema. What is most impressive is that even at this early date theorists were careful to point out that a schema is not a static concept but a dynamic, ever-changing one. That is, even though a schema is the identification of an environmental regularity, its application in the real world requires that the schema undergo constant change in order to maximally fit any new environment that the person may find himself/herself in. This important notion of dynamic change, while retained by such theorists as Piaget (especially his ideas of assimilation and accommodation), has been lost to several modern-day computer scientists, e.g., Charniak, 1975, who indicates "a frame to be a static data structure about one stereotyped topic" (p. 42). One can understand the need to simplify the notion of a schema in order to program the vast detail implied by a schema in program language; nevertheless, the decision to make the concept static may in the long run defeat the original purpose of explanatory breadth and adequacy.

Chafe and Rumelhart were in their turn influenced by the early work of Bartlett. Bateson's (1972) use of the term frame later influenced the work of Hymes (1974), Goffman (1974), and Frake (1977). A particularly well worked out set of definitions of schema-related terms can be found in the book by Schank and Abelson (1975). A vignette is defined as a labeled action, and a series of vignettes clustered into separate scenes comprise a script. At higher levels, scripts may occur in order to realize plans, which, in turn, are a series of projected actions used to satisfy goals. A theme is described as a family of goals that tend to occur together because of the attributes of actors. A goal is a realization of a component of a theme.

We see that the series of schema-related terms is organized roughly from a fairly precise set of terms to a more open-ended or less sharply defined set of terms. The interrelationship among some of these terms, along with other more detailed terms, can be seen in the Schank and Abelson idea of a restaurant script.

SCRIPT:	Name (e.g., restaurant script)
TRACK:	A particular version of a script (e.g., a French restaurant)

PROPS:	Objects in the restaurant
ACTORS:	Actor names (the participants in the restaurant script)
ROLES:	Actor name, role name (e.g., Mr. Smith, father of Tony)
SCENES:	Name, partial order sequence of scenes (e.g., in a restaurant script, entering, examining menu, ordering, eating, paying, and leaving are six scenes that occur usually in the order stated)
ENTRY CONDITIONS:	Predicates on actors (e.g., the person entering restaurant is hungry)
RESULTS:	Predicates on actors (e.g., the person's hunger is satisfied)

Freedle and Duran (1979) have pointed out how this example of a script and its associated terms is similar in spirit to terms used in sociolinguistics that define constraints on how particular settings (props) and social participants (actors) adopt certain speech forms (analogous to a particular track of a script) in order to perform certain social functions (particular entry conditions, goals, and results). An early discussion of these sociolinguistic constraints can be found in Ervin-Tripp (1964).

Tannen (1979) has revealed a correspondence between some of Minsky's (1975) work on artificial intelligence and other schema-related work. For example, Minsky's notion of a frame appears to resemble the Schank-Abelson script notion since a frame is identified as an all-inclusive term for representing the data concerning a stereotyped situation. Thus, the event sequences of a birthday party (which Schank-Abelson would call a script) is a frame that contains ordered expectations about objects and setting. Four levels of frames are distinguished: surface syntactic frames (such as verb and noun structures), surface semantic frames (which Tannen indicates are similar to Fillmore's case frames), thematic frames (akin to scenarios), and narrative frames (akin to Schank-Abelson's scripts).

It is clear that different fields of inquiry have identified recurrent regularities of the environment, but they have combined different clusters of these regularities and have given the several clusters different names. Although one might hypothesize that the particular features that get clustered together are a function of the interests, methods, and goals of a particular discipline at a particular point in time, one nevertheless gets the distinct impression that these various clusterings are quasi-random groupings that depend upon the particular examples that each theorist has used to illustrate the regularities of different human environments. Perhaps no single theory can be said to represent the "true" way of partitioning the environment. Indeed, we shall see below that there are probably as many legitimate ways of partitioning the environment and noting regularities as there are different communities of individuals. If each community experiences the environment in slightly different ways, then the regularities that can be discovered will probably be different, and the ways in which different levels of the environment co-occur will tend to make certain features appear to be more closely related for just one group rather than for all groups.

Be this as it may, the essential point is that schema theory serves an important function in accounting for the regularities of the environment, and that it also serves as a description of the kinds of internalized knowledge that individuals bring to bear in acting upon the environment. But why is it necessary for individuals to construct schematic regularities? The next sections explore the cognitive basis for schema theory and then develop examples of how these schemata can differ across different cultures.[1] After building a case for how schemata apply to human behavior, it will then be argued that these concepts apply as well to a particular behavior--that of language. Language is further argued to be an ideal source for isolating the existence of schemata and for studying how schemata function. A particular theme that will prove useful in this regard is the phenomenon of miscommunication as a paradigm for isolating and describing the form and function of schemata in behavior. Subsequent sections will then consider the application of these results to educational practice, and will further consider extensions of schema theory as it relates to inquiring systems decision theory.

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[1] My use of the concept culture is perhaps old-fashioned; I prefer to use it because of its convenience, but with the following qualifications. The more modern view among anthropologists is that the use of culture implies a uniqueness which simply does not exist; instead there appears to be a group of shared features which are common to all groups, but where the specific values taken on by any given feature may vary across groups. To say that one group has culture A and another group has culture B is to obscure the common underlying features (Gumperz, Note 2). I readily acknowledge the good sense of this modern view. However, given some of our assumptions about schema theory and behavior, I am tempted to point out that this view might obscure one of our behavioral generalizations: extensive exposure to the habitual routines of any group tends to render the whole pattern of behavior as a gestalt. This does not contradict the new anthropological view inasmuch as the features that comprise the behavioral gestalts of different groups may have much in common.

The Cognitive Basis of Schema

The general assertions that follow are meant to apply to many aspects of behavior. After presenting these, I shall further argue that these constraints apply to language behavior in particular. We need this connection because language serves as a rich source for demonstrating the existence of these schemata. The first self-evident fact is the following. It is impossible for our brains to keep track of all the nuances that take place in the environment. Psychologists have found (Miller, 1956) that we can handle a small amount of information and can make only a few decisions per unit time. How then do we manage to survive in this complex world? Part of the answer is that we do it by oversimplifying the world. We schematize it. Why does this work? It seems to work because the world is redundant and somewhat predictable; therefore, these schematizations very often lead to correct and workable interactions with the environment. The only decision we have to make is which schema appears to be in operation at any one time; when we find the apparently correct one that fits the current situation, all we then must do is to follow out the familiar steps of the schema in an almost automatic way. This greatly reduces the new decisions that have to be made at any one time. Furthermore, with a great deal of experience, we often decide that many of the nuances in the environment are not important for every task we perform. This simplifies some of the complexity still more. Also, we humans construct highly redundant sociocultural environments, possibly in order to make the world even more predictable and less threatening. Our social structures and habitats are very predictable when one grows up within a particular culture and has experienced the natural groupings, values, and norms that make the group function smoothly. Such organizations help to overcome our limited processing capabilities even more.

Up to now, I have suggested our human limitations and how this leads to schema formation. But we have strengths, too, which also have import for schema functioning. In particular, with a great deal of practice, we are able to convert very complex tasks that originally required hundreds of decisions, piano playing, for example, into virtually automatic tasks. Paul Fitts (1964) was an early explorer in this realm. He found that learning the early phases of complex tasks greatly depended upon cognitive abilities, but later phases of these complex tasks were almost totally dominated by unique variance. That is, the tasks were learned holistically and functioned automatically as isolated packages of information. This is another way of saying that new schemata can be formed no matter how complex, and these schemata can be selected for their general usefulness within a particular cultural community. Thus, even though we are cognitively quite limited in our computational powers for novel experiences, nevertheless, if we are given a redundant cultural setting and a great deal of time, we can build up an arsenal of complex schemata for handling all the useful functions for all the significant settings that a culture typically experiences. The rub in all this is that cultures differ in what they consider useful; hence complex schemata can differ across cultural groups. As we shall discover below, these differences in schemata, especially schemata used in communication processes, will be the source of many miscommunications.

The general conclusion you are invited to draw at this point is that oversimplification of the environment is inevitable; our finite capacities demand the construction of cognitive schemata that serve to bypass an information overload. And even though a large number of complex schemata can be learned and used in an almost automatic way, error is still inevitable, even within a community, because schematizations are necessarily incomplete representations of the environment.

Some Comments on Language Schemata and Communicative Schemata

As I already suggested, the facts about behavior in general can also be applied to language in particular. Let me quickly cover these points. It is impossible to represent with any language all the nuances that can potentially be noted. Language is, in this sense, necessarily incomplete and ambiguous. We tend not to notice the ambiguity of language for as long as we operate within the well-rehearsed norms of a particular language community. That is, by virtue of being in a language community for many years, a large repertoire of complex linguistic and paralinguistic schemata can be learned, and can come to function in an almost automatic way. These linguistic and paralinguistic norms (intonation cues, eye-gaze patterns, junctures for discourse groupings, etc.) are further smoothly merged with social conventions and values that must be honored in communication within a community. The notion of communicative competence (Gumperz & Hymes, 1972) is applicable here. Because communities differ in how sociolinguistic competence is realized in speech, and because language is necessarily an incomplete representation of reality, the inevitable consequence is that error in communication is bound to occur. Hence miscommunications across cultures should be more prevalent than within cultures. Let's consider some of these examples.

Communication Breakdown: The Stresses of Cultures in Contact

One might naively suppose that serious breakdown in communication occurs only when complicated topics are being discussed. The communications of interest below, though, are typically not of that type. In fact, the failures in communication especially between people who come from different cultural backgrounds (but all of whom know English) often involve some of the most mundane of topics: asking a question, trying to provide helpful information, and the like. It is also worth noting that the individuals who are involved in the communication failure are often puzzled and cannot explain what went wrong. This signals the largely automatic processes by which communication is effected. As we shall see, researchers have isolated some of the largely unconscious and subtle cues by which full-fledged language community members carry out their largely successful communications. Hence, when participants from outside this knowledge system bring a slightly different pattern of subconscious cues to bear for purposes of language comprehension, mismatches occur more frequently. The outcome of these mismatches, unfortunately, can often be unpleasant shouting, anger, wild accusations, and so on. Mutual avoidance is also a likely outcome.

Some Simple Examples of Miscommunication

An Indian bus driver newly arrived on the job in London wishes to be polite and efficient. His customer steps into the bus. He says, "Exact change, please." The customer apparently didn't hear and asks for a repetition. The driver responds with, "Exact change [pause], PLEASE." The traditional British customer takes offense for what is regarded as an attempt to act superior or to be cheeky, even though there is nothing in the situation that would make such an interpretation plausible. In reserved British culture, emphasis is avoided unless especially necessary. In the Indian language, the emphasis that is here achieved by pausing and giving emphasis to the word "please" is customary in achieving clarification. A mismatch has occurred. The driver's job is now in jeopardy. Notice that the outcome of the mismatch, while not prescribed, is typically negative as it was above. This appears to be especially so when two strangers from different cultural backgrounds are involved. (The example is from Gumperz, 1977.)

Another example of interest comes also from Gumperz (1978). It involves an error in interpreting a "flat" intonation pattern used in pronouncing the word gravy, again with negative consequences. An Indian woman has been hired to serve gravy in a cafeteria line serving British workmen. The British worker probably expects some pleasant chit-chat possibly conveyed through the use of a dramatic intonation of words. The worker moves in place and approaches the woman serving gravy. Decorum in

Indian society dictates that a woman remain reserved or "distant" in interacting with strangers. To accomplish conflicting demands, she merely inquires about whether the workman wishes gravy by uttering a flatly intoned "gravy." However, this puzzles the workman, who cannot decipher the intonation pattern according to the language norms of his community. He decides that she is trying to insult him. Again, a mismatch in communication patterns has led to a negative outcome although other options could have been invoked to avoid a confrontation.

Nix and Schwarz (1979) have presented some interesting examples of how individuals from the black subculture[2] in New York City differ from white mainstream individuals in their interpretation of simple passages. They presented the following passage to individually tested black students in their New York classrooms. (Each student had to complete the passage by choosing which word made the most sense to him or her at the end of the passage: "Sally loved animals. She brought home every stray animal that she could find, no matter what it looked like. Her mother declared that she adopted any animal as long as it was: A. lively, B. alive, C. large, D. lame.")

Most members of the majority culture pick option B (alive); members of the minority subculture tended to choose option A (lively). To investigate why this happened, an extensive interview was carried out by Nix and Schwarz to see how each person justified his or her choice.

It is difficult in a review piece to do full justice to the novel analysis that the investigators bring to bear on their data, but the gist of their findings is that when option B (alive) was chosen, the passage was subjectively organized into a topic-comment discourse frame; but when option A (lively) was chosen, it was internally represented as an action-reaction discourse frame. More particularly, choosing the option lively rather than alive as correct was justified because alive represents a truism and should be rejected on that basis. But the majority mainstream choice of alive in contrast was justified by indicating that this represented a stance of hyperbole and exaggeration. Thus both groups evoked reasonable criteria for justifying their choices, but the frames that helped guide their original selection were clearly different. To further illustrate these differences in interpretive frames the students were asked whether the option "lame" would be correct. Those minority individuals who originally chose lively rejected lame because it is not a reasonable behavior for sensible people to waste money bringing home lame animals, whereas the group that originally chose alive accepted the possibility of choosing lame because "bringing home disabled animals is humane behavior sanctioned by the community." Thus the underlying frames differentiating the two groups was a pervasive sense of the scarcity or abundance of money. It is more difficult to pinpoint the frame which led to the topic-comment versus the action-reaction differentiation. But it seems reasonable to expect to point to the different cultural experiences as underlying the observed divergence in choices for purportedly the "same" surface utterances. This illustrates very clearly that language per se is ambiguous and that to comprehend a passage we must necessarily initiate interpretive frames to fill in the information that is unstated. Clearly, the two groups have filled in the missing information in different ways; hence, they must have used different interpretive frames in order to arrive at different justifications for their choices.

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[2] Here again the frequently used term subculture has some unwelcome connotations--it suggests a value judgment of inferiority that is certainly not intended here, and it suggests the legitimacy of the notion of culture--see footnote 1 for a clarification of the notion of culture. Hall and Freedle (1975) suggested that the idea of an embedded community or culture could be used to refer to such minority individuals as black Americans, whereas the idea of an encapsulated community or culture may be used to apply to native Americans. But these new terms may not apply to the situation of every ethnic group--rather than prejudge this problem, and because these new terms have not yet gained currency, I prefer to use the more commonly understood term subculture to refer to minority communities.

Not every interpretive difference is necessarily discovered by contrasting different culturally based groups. Even within a culture, deviations from normative use can be appropriate. For example, Frake (1975) suggests that on some occasions violations of a carefully prescribed ritual are used to communicate social messages such as solidarity and humor. Because members of the same community share the details of the proper ritual (i.e., have internalized a full schema of what it means to carry out the ritual in correct form), this shared knowledge (shared schemata) forms the background against which special meanings such as affection, humor, or hostility can be marked or called attention to. Yet even within a culture, such deviations from the norm may be misinterpreted. This is just another way of demonstrating that language forms and context are necessarily incomplete in specifying the full intentions of the actors and speakers. Miscommunication can therefore occur, albeit less frequently, within a language community, as well as across culturally different communities, whose members are attempting to speak the "same" language. An extreme case could therefore be made for claiming that no two people speak exactly the "same" language simply because the interpretive competencies of any two individuals, even members of the same language community, are in some details different. This extreme case can be justified by pointing out that instruction in becoming a member of a language community is never complete because we lack the conceptual tools for removing all sources of ambiguity from our attempts at instruction in the home and elsewhere.

The differences among individuals can be illustrated by reference to the concept of personal "themes" (Agar, 1979). Themes are similar to the notion of frame or schema, but Agar restricts the idea in his paper to presumably represent individual differences in world-view. The idea is that the personal philosophy and prevailing tendencies of an individual cause him or her to make sense of (interpret) the situations he/she encounters. Prolonged informal interviews with three individuals reveal striking differences in the details of their respective themes. The subthemes used by the first person highlighted three concepts: (a) social control and interaction is a problem; (b) admiration and respect if the social other demonstrates knowledge, and (c) social control is a problem unless there is a demonstration of knowledge, the coordination of the first two themes. Thus all three subthemes are interrelated for this person. A second person who was studied highlighted social independence. Yet another theme highlighted a lack of social independence. No third theme at the same "level" had yet emerged to successfully bridge these two contradictory themes. However, a third theme at an unspecified "level" did emerge: it involved the ability to "talk." To this person, talking need not imply social commitment; it is merely a way to have social contact without commitment. For the third person studied, the overwhelming theme in most aspects of the interactions involved his Chicano identity. This dominated the characteristics of subordinate themes such as family life, friends, religion, and occupation. Thus this third person had evolved a hierarchic system of main theme and subthemes different in structure from the first two individuals. Undoubtedly a study of all individuals in a particular community would reveal some striking differences in the organization of their personal themes that are habitually invoked to interpret and make sense of the world about them and their interactions with the world. Such idiosyncratic differences are also potential sources of miscommunication.

Erickson (Note 3) has written an important paper concerning the subtle ways in which nonverbal cues of eye-gaze can create the source of miscommunication across ethnic groups. Typically, when a black teacher speaks to a black student he/she maintains eye contact while speaking; while listening, each maintains only sporadic contact. Just the opposite holds for white teachers and students; that is, white speakers tend to allow their eyes to dart about while speaking, but when listening, they maintain constant eye contact. This nonverbal communication habit would seem naively to be unimportant to what is being communicated and how it is being interpreted; but the naive view is wrong. When white teacher and black student were combined, their "conflicting" gaze patterns led to the following miscommunications. The black student appeared to be not listening or not understanding. This happened because the gaze mismatches led to a poor detection of the speaker's LRRM (Listener-Response-Relevant-Moment). This is a signal that some response from the listener, the black student, is expected to indicate (for example, clear understanding), and a similar signal from the black student was missed by the white teacher. The ultimate outcome of the miscommunication was, as before, a negative interpretation. The white teacher began to use one of two forms of hyperexplanation, either talking down to the student or giving repeated reasons for his assertions. The student interpreted this to mean that the teacher thought he/she was stupid. Again miscommunication has led to negative evaluation.

The "raw" material out of which a culture fashions nonverbal rapport-type communication signals is suggested by some reviews of Kempton (Note 4, manuscripts undated). Synchrony at the microlevel is demonstrated in the following wide range of behaviors: when someone speaks, the person exhibits self-synchrony, which means that the parts of their body move in synchrony with each other and with the speech. There is also interpersonal synchrony so that a speaker's movements are in synchrony with the listener's. Although different parts of the body move at different speeds and in different directions, yet they change direction at the same time. Condon and Sander (1974) have found self-synchrony even in newborns. Kempton also reports synchrony in primates. Dyssynchrony might occur in monkeys just before departure from the group. Dyssynchrony also has been reported in pathological behaviors such as schizophrenia, aphasia, epilepsy, autism, stuttering, etc. Most importantly for its cross-cultural implications in miscommunication, there is more synchrony observed between members of the same subculture including mothers and their infants, and men and women of the same culture. Once culture superimposes obligatory patterns on some of these movements (e.g., to cue an intended interruption or the like), these subconsciously processed contextualization cues become part of the interpretative apparatus that can lead to successful communicative interactions or to puzzling unsuccessful miscommunications, as between members from different subcultures.

With respect to educational settings one may detect an example of how different patterns of synchrony may alter the quality of teacher-student interactions. Byers and Byers (1972) studied the nonverbal interactions between a white teacher and two black and two white 4-year-old girls in a nursery school setting. The teacher appeared willing to interact equally with all students. But of the two most active students (one white, one black) only one was more successful at catching the attention of the teacher, the white student. Eight out of 14 attempts were successful in catching her attention; but for the black child only 4 out of 35 attempts to attract the teacher's eye were successful. Is this an example of mismatched patterns of synchrony? It seems likely for the following reasons. The white child timed her glances during those moments when the teacher was most likely to notice her; but the glances of the black child were timed when the teacher's attention was focused elsewhere so that she did not realize the child was attempting to interact. These researchers also report what can be labeled here as an example of affective asynchrony.

The white student approached the teacher at times, which "naturally" led to the teacher's touching or hugging the child or having her sit on teacher's lap. But the black student made "inappropriate" (asynchronous) moves at crucial moments. This resulted in fewer nonverbal expressions of affection.

While Agar's (1979) study reveals persistent themes (schemata) at the level of individuals, Tannen's (1979) study reveals that there tend to be persistent themes for many members of a particular culture. These prevailing themes affect what significance is attached to everyday events, such as taking a bike ride past an orchard, encountering other individuals along the way, and the particular import of transferring food items. Of Tannen's many findings, the most relevant here in contrasting Greek and American groups are: (a) Americans comment on the film that they have seen by explicit reference to the film as a frame for guiding many aspects of their interpretations; the Greeks, however, seldom referred to the film per se in their comments; (b) there is a strong moral framework invoked in commenting on the film's actions by the Greeks, but this is infrequent among the Americans' comments; (c) Americans overtly remembered more details than the Greeks in one 'falling' sequence. Tannen suggests that, in this last finding, the omission may be tied to the Greeks' tendency to interpret events and ignore details that did not lend themselves to this interpretation.

Here we see that frames exist at many levels that filter the "raw" data of the film into a prevailing way of organizing and making sense of sequences of actions. Such different orientations may lead to miscommunication when first-generation Greeks come to America, learn English, but persist in using these older interpretive frames to decide what is important to talk about and how one should realize this in speech. Tannen is currently engaged in analyzing data relevant to this last point.

Chafe (1977) suggests that there are wide differences in how cultures choose to structure details about a topic and how they make summarizing statements about the same topic. In conversation, he suggests that in Anglo culture people tend to begin by summarizing an event and then giving details. The Japanese, though, typically build up the details and then present the summary at the end. Such differences across speakers may contribute to disorientation or possibly impatience (e.g., "Get to the point, will you?").

Grimes (Note 4, personal communication) has indicated that a difference in style exists even in Anglo culture among the various scientific disciplines in how they report their findings. He suggests that the rhetorical structure of articles in sociology and anthropology are oftentimes different from that of linguistics. A linguist tends to put his conclusions first and then gives details, much like a mathematician who presents his theorem first and then proceeds to prove it. Whereas anthropologists discuss their methods and reasoning near the end of their papers. Such differences can create problems in smooth communication across disciplines.

Some Patterns of Communication Among Native Americans

Additional evidence concerning cultural frames that create communication problems across members of different language-culture groups comes from an early paper by Cazden and John (1971). Teachers often regarded Indian children as "shy" and "reluctant to talk." In the Anglo culture this might be interpreted negatively as possible evidence of retarded language development or psychological problems. The same behavior in Indian children probably has another explanation. Apache Indians consider it foolish to talk a great deal. Cazden and John indicate that in the Sunrise Dance representing the coming-of-age of young girls, the girl's grandmother places her hand over the girl's mouth to indicate that silence is a virtue. In their literature review (also see Cazden, John, & Hymes, 1972, pp. 331-394) they indicate that Navajos freeze up when looked at directly. Teachers might respond to the Indian child's bowed head (avoiding gaze) with such inquiries as "What's the matter? Can't you talk? Don't you even know your own name?" In addition, it has been reported that Navajos do not prefer to comment on a topic unless they regard themselves as highly proficient in it; to speak prematurely on a topic not fully mastered is considered a breach of intelligent behavior. Anglos, of course, have a different orientation since they regard practice as a prerequisite to obtaining full mastery. In other words, a mismatch in rules concerning when it is proper to talk exists across several Indian cultures in comparison with Anglo culture. Furthermore, a mismatch in presuppositions concerning the role of practice as a necessary step to attaining full mastery of a topic also exists. Both of these mismatches typically create negative assessments on the part of ill-informed teachers when faced with Indian children in their classrooms, even though a close examination of the sources of the miscommunication reveals that a negative evaluation is probably unwarranted.

Philips (1972) studied the speech behavior of Indian children inside and outside the classroom. In their community, interactions among participants do not recognize the Anglo distinction between a performer and an audience. Furthermore, there is no clear sense of "leader" of an activity (such as is assumed for the role of "teacher" in an Anglo community). Instead each person decides the degree to which he or she will participate in the activity at hand. All who are present are free to participate if they so choose. In the Anglo classroom studies by Philips (1972), however, there are four types of social-participant structures, some of which merge with the sociocultural rules of the Indian children and some of which violate these norms. The four structures are: (a) The teacher interacts with all the students, and it is always the teacher who decides whether to talk to just one person or to all. Also, a response from the student is obligatory and not a matter of individual choice. This clearly violates Indian norms. When the Anglo norms are violated, the child is probably labeled as "hostile" or "uncooperative." (b) A second structure used in the classroom involves the teacher interacting with only a subset of the class, such as special reading sessions. Participation is mandatory, and individuals are expected to perform verbally and singly rather than in chorus. The main purpose of this structure is to provide the teacher with an assessment of how much the student already knows of a certain skill. Hence, it presupposes incomplete mastery of a field, and also presupposes that individual responses will reflect incomplete mastery. This clearly violates Indian norms. Violation of the Anglo norms in such a case probably results in a student's being labeled as incompetent with respect to the knowledge domain being assessed. (c) The third classroom structure consists of all students working independently. The teacher is explicitly available to help, and this help is forthcoming if the student requests or initiates the interaction. The other students do not witness the details of the student-teacher interaction. This pattern does not contradict Indian norms for interaction. (d) The fourth interaction structure (which occurs infrequently in upper primary grades and very seldom in the lower grades) is also consistent with Indian interaction norms. It involves the students' being divided into small groups that are run by members of the group for the purpose of special "group projects." The teacher is still available for supervision if required.

In sum, it is clear that detailed ethnographic studies of the actual nature of structured interaction in these "naturalistic" settings within and outside the classroom clearly places Indian children at a disadvantage in terms of maximally benefiting from classroom activities that are structured in such a way as to violate norms instilled in the children from birth on. Not only does it fail to provide them with an optimal means for instruction, but it also alienates them with frequent negative evaluations given them by nonunderstanding but well-meaning teachers.

Weeks (Note 5) has presented a wealth of information concerning different patterns of language use among Yakima Indians that help to clarify additional sources of miscommunication. The native language of Yakima children is English. Yet school personnel complained that these children seemed to have "language problems" of a largely unspecified nature. Data analyzed by Weeks contrasted Indian children's use of language with non-Indian children who lived on the Yakima Reservation and also contrasted both with non-Indian children from Palo Alto, California.

Among the important findings are the following. Answers to questions are not obligatory, as it appears to be in Anglo culture. A question may be answered, perhaps at a later time. The typical pattern of Question, Answer, Confirmation (as in "What time are we to leave?" "At 6." "OK.") is therefore atypical in conversations with these Indian children. Furthermore, when they do answer questions, it is often in the form of a question. There is strong resistence to admitting to partial or no knowledge; hence these children typically will not say "I don't know." (It also helps to explain why they tend to answer a question with a question.) Yet this phrase is very common among Anglo children. This appears to be related to our earlier comments concerning the inappropriateness of speaking when one hasn't fully mastered some topic. Indian children are also not inclined to guess. They would lose face if their guessed-at answer proved to be wrong. This again is related to community norms which govern when one should speak on a topic. Guessing, however, is a frequent occurrence among Anglo students, and Anglo teachers appear to encourage it.

Weeks reports that for the language tasks which she used to explore differences in language use between Indian and non-Indian children the following emerges. The Indian children depart from the stimulus pictures more and speak about related personal experiences. In presenting these experiences, they often quote previous conversations in what appears to be verbatim form, thus giving a narrative register form to their comments--e.g., "Grandma said, 'Tommy's going to get that boat and take us a ride on there. Waaaaay out there." "Where?" "Waaaaay out there." [All produced by the same student.]

The Yakima children often appeared to take control of the conversation by asking questions of the teacher. Anglo children rarely do this since it is assumed to be the role of the teacher to ask questions. Many of the questions asked by the Indian children were of a personal nature; Anglo children seldom asked personal questions. The Yakima children interpreted the interview as a friendly visit, whereas the Anglo children assumed that there was a special purpose behind the interview ("What am I supposed to say?"). Anglo children regularly corrected the teacher if the teacher appeared not to understand something they said. Indian children did not correct the teacher. Also, Indian children did not interrupt; in contrast, the Anglo children and the non-Indian children at Yakima often interrupted the teacher.

In terms of distribution of summary comments versus details, none of the children who were studied in the interview summarized as an adult might summarize. Yet the non-Indian children listed details in the pictures and began without any prompting by the teacher. The Indian children studied here picked up a picture and waited for the teacher to say something. When speaking, the Indian children often projected what might happen, whereas the Anglo children spoke of what was directly in the picture.

It is clear that there are complex presuppositions behind these conversations. If one cannot specify what they are, an Anglo teacher is likely to misinterpret the motivations and significance of the Indian children's statements. Such a teacher is likely to feel ignored (they don't acknowledge questions), or feel their authority has been usurped (they begin asking the teacher questions), or feel that they don't stick to the point (they project what might happen, and they use a narrative story-telling mode rather than just list facts). Yet all these misjudgments represent a failure to appreciate how cultures differently frame events, and differently frame when it is proper to speak and how one must present the information.

Selected Aspects of Bilingual Classroom Interaction

The interesting reports and studies authored by Laosa (1975; 1979, in press, a; 1979, in press, b) on classroom interaction, especially for Latino populations in various regions of the United States, also reveal subtle patterns of discrimination. Many of the studies cited (see footnote on the first page of this chapter) appear to show more obvious evidence of overt discrimination based on ethnic differences. Racial prejudice functions as a characteristic of the individual, in this case classroom teachers, and so is related to Agar's (1979) idea of personal theme. Prejudice functions as a selective filter affecting how the external social world is perceived and how it is to be responded to.

Rubovits and Maehr (1973) studied teachers' interactions with white and black students in seventh- and eighth-grade classes. Black students were treated less positively than white students. In one experimental variable (the random labeling of students as gifted or nongifted), the surprising finding was that black students who received the random label of gifted were subjected to more discrimination by teachers than black students who were randomly labeled as nongifted. These researchers also found that teachers who were rated high on dogmatism (a rating reflecting an authoritarian outlook on life and intolerance towards those with different beliefs) tended to encourage their white students but ignored the black students.

Jackson and Cosca (1974) examined classroom interactions involving Mexican American and Anglo students. Elementary as well as secondary schools were studied. The results in general showed that teachers praised and encouraged Anglo students more than Mexican American students. Teachers responded more positively to, and used more of the ideas suggested by, their Anglo students than those suggested by the Mexican Americans.

Combining all three positive teacher behavior ratings (teacher accepts student's feelings; teacher praises student; teacher accepts student's ideas), it was found that the Anglo students received 40% more positive feedback than did the Mexican American students. Teachers asked Anglo students 21% more questions and spent 23% more time talking to their Anglo students.

In addition to ethnic background, socioeconomic level interacts with teacher behaviors. Higher SES children tend to receive most of the teacher's praise, while lower SES children get more criticism (Davis & Dollard, 1940). Academic achievement interacts also with teacher behavior. High-achieving students receive more favorable comments from teachers (Heller & White, 1975). Brophy and Good (1970) found that high-achieving students initiated more interactions with the teacher, most teacher criticism was addressed to boys in low-achievement groups, teachers demanded and praised quality performance more from the high-achieving than from the low-achieving students. Also, teachers provided less feedback to the low-achieving students.

Laosa (1979, in press, a; 1979, in press, b) has pointed out that Mexican Americans are at a distinct disadvantage in the average classroom situation because they embody all of the characteristics that previous research has shown leads to poor interactions of teacher and student. Among these characteristics are (a) difference in ethnic background, (b) likelihood of speaking a nonstandard English dialect, (c) low achievement, and (d) lower socioeconomic status. Because of this, it comes as no surprise when he indicates that 40% of all Mexican American students in the Southwest never complete high school, whereas this is true for only 14% of the Anglo population. Laosa's research on teacher-student interactions for minority student populations documents the exact nature of unfavorable teacher-student interactions. Some of his most interesting findings are that a student's language dominance (Spanish or English), rather than the student's ethnic group membership per se, was the primary source for eliciting a teacher's disapproving behaviors. This interacted with age in the following way. For non-English dominant students, there was an increase from kindergarten to second grade in the number of disapprovals given by teachers. However, just the opposite was true (a decrease) for students (both Anglo and Mexican American) who had English as their dominant language. Laosa sketches the long-term consequences for non-English dominant students. Increasing rate of discouragement by teachers coupled with a decreased rate of nonevaluative information feedback by teachers is likely to lead to disruptive attempts at capturing the teacher's attention (e.g., by playing pranks or speaking "out-of-turn") and/or developing a deep indifference for academic skills (e.g., indifference to arithmetic and reading), with an ultimate dropping out of the school system entirely. Laosa further points out the irony of bilingual-bicultural education as it was implemented in the classrooms that he studied--it is definitely no assurance of educational quality nor assurance of equality of opportunity for ethnic minority and limited-English-speaking students.

Ordinarily one might assume that just because the teacher has low expectancy concerning a particular student's performance, this in itself need not have any effect on how well the student learns the materials at hand. However, an ingenious study by W. B. Seaver (1973) indicates that even in an all-Anglo classroom low teacher expectancy does depress actual student accomplishments as assessed by eight measures of academic achievement: two grade point averages from winter and spring terms, scores on word meaning, paragraph meaning, vocabulary, spelling, word study skills, and arithmetic (subscales of Stanford Achievement Test). Neither students nor teachers knew they were involved in a study. Experimental and control groups were determined in the following way. If an older sibling was rated as "high" or "low" with respect to the above eight measures, their younger sibling was placed in the experimental group if they both had the same teacher. The younger sibling was placed in the control group if they had different teachers. Thus if teacher expectancy influences the younger child's performance as a result of the teacher's earlier experiences with the older sibling, this design should reveal this. Note that the fact that siblings may share similar abilities (a "smart" older child may have a "smart" younger sibling) is controlled for here by the way in which the control group has been defined. The significant effect of teacher expectations on performance was evident. High-scoring older siblings tended to have higher-scoring younger siblings in the experimental groups for all eight scores. For the low-scoring older siblings, their younger siblings scored lower in all but one of the eight scores, word study skills. Significance in the expected directions across control and experimental groups, however, occurred on word meaning, paragraph meaning, and math. Thus, even when variables concerning ethnicity and social class are not a concern, one can still detect differential teacher behaviors that prejudice how they respond to students based upon the "sins" of their older brothers and sisters.

It is clear that culture molds and defines inevitable aspects of behavior to signify more than one would believe is literally possible. That is, eye-glances, body angle, eye-blinks, head nodding, time intervals between these movements (rate and frequency), vocal emphasis, variation in voice pitch (intonation patterns) and so on. These inevitable behaviors, however, are segmented and grouped differently by different cultures to signify and clarify more than words alone can convey. This is the crux of the difficulty in understanding miscommunication.[3]

The redundancy of context that pervades most discourse among members of the same culture is a protective agent against miscommunication. Repetitions of highly familiar events encourage casual cognitive monitoring of the significance of these events. But between cultures, verbal interactions tend to be brief and infrequent. Thus the protective aspect of redundancy in prolonged pursuit of a topic or in frequent interaction is typically absent in cross-cultural encounters. Hence suspicions that make these encounters brief in the first place also contribute to a negative interpretation of intentions when contextual cues fail to provide sufficient cues to guide correct interpretations.

Difficulties and Implications for Revised Educational Practice

To reduce these sources of miscues one cannot suggest that people consciously try to stop all these behaviors. In normal unplanned conversation it seems likely that these extralinguistic behaviors are crucial for successful communication. It also seems unlikely that an adult (e.g., a teacher) is capable and willing to adopt these unconscious and highly patterned cues from all minority subcultures so as to assist communication for all members of a mixed ethnic classroom. Of course, a teacher who is knowledgeable that such pattern-specific behaviors exist and vary across subcultures and are crucial to understanding is in a better position to avoid premature judgments concerning a student's thinking skills (stupid), motivation level (sluggish), and personality characteristics

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[3] Fishman (Note 6) has raised the following possible objection to identifying proxemic and kinesic cues as the source of the problem in miscommunication across groups. Does one seriously suppose that if everyone used the same linguistic and extra-linguistic communication cues, that all ethnic antagonisms would come to an end? Rather, would not new sources for accentuating differences be found? I think the answer to this provocative question is maybe "yes" and maybe "no"; ideally the answer depends upon the depth of change in individual insight that is gained by learning about other communication patterns so as to minimize the occurrence of miscommunication. If all individuals, by virtue of such instruction are raised to a higher moral plane, then it might be that purely ethnic differences will be ignored and will cease to be the direct cause of miscommunication. However, the pessimistic answer would have it that humans will inevitably sink back into assigning a negative value to any new differences that might be noticed. There probably are good historical reasons for believing in both points of view.

(hostile, willful). Instead this more knowledgeable teacher could be taught to pause and rethink the cause of each clear failure to interact smoothly with a student. Not every failure may be reflected upon, but some significant proportion may be. Students might also be interested in learning these communication skills.

Linguistic Differences in Language: Some Cognitive Speculations

A second area of importance concerns the language code itself--the lexicon, syntax, and semantics of a given dialect. The problems here can be as difficult and subtle as those we found for isolating nonlexical contextual cues in comprehension. Both are necessary to appreciate a wide range of miscommunications that regularly occur.

The Lexicon

One of the few studies I know of which tries to directly examine how words differ across subcultures is that of Davis, Soriano, Siojo, and Haynes (1974). They studied words that are common to the dialects of the several groups studied, including blacks, Mexican Americans, native Americans, Oriental Americans, and Anglo-Americans. They obtained clear though indirect evidence that the words probably are different in what they signify across the different populations. Hall and Freedle (1975) have discussed some of the particulars of their findings. Additional evidence of lexical differences even among individuals of the same language community can be inferred from Freedle's (1970) word-sorting task where semantic-nodes were combined by each individual into a hierarchic tree. The results showed that no two individual tree structures were identical (Witkowski & Brown, 1978). Although differences can be found, there is strong evidence of a few lexical universals across cultures and languages. Thus two extreme views are possible: individual differences do exist, language community differences do exist; but there is a common core of ideas and terms that suggest that the underlying processes leading to semantic characterizations are probably identical even though the particular surface realizations may be different. Witkowski and Brown (1978) suggest that universals exist for color terms (Berlin & Kay, 1969), lexical connotations (Osgood, May, & Miron, 1975), and affective responses (White, Note 7). Other invariances have been reported for such broadly based categories as folk botany terms (Berlin, 1974) and folk zoological terms (Brown, 1977). Witkowski and Brown (1978) then suggest four principles of naming behavior:

1. conjunctivity (including binary opposition);
2. criteria clustering;
3. marking; and
4. dimension salience.

For example, under binary opposition many languages contrast such dimensional polarities as wide/narrow, deep/shallow, and so on. They are similar with respect to isolating the same kinds of underlying dimensionality. Similarly, some dimensions count as more salient or important than other dimensions: e.g., size is a very potent dimension. Many languages tend to cluster certain defining features; e.g., Bruner, Goodnow, and Austin (1956) indicate that the concept "bird" is associated with such criteria clusters as wings-feathers-bill. Environmentally the co-occurrence of wings-feathers-bill may be so regular that together they generate the necessary conditions for language community members to invent a lexical concept--bird--to reflect this environmental regularity, providing the concept is useful in their cultural activities. "Marking" also tends to have a regular process underlying it across languages. For example, in the adjective contrasts reported earlier (e.g., deep/shallow) it is frequently the case that one member of the pair functions as the unmarked "name" for the dimension, while the other functions as the marked end. That is, in asking about the dimension of "depth" of a lake, the natural way to ask it is "How deep is it?" but it is not correct to ask "How shallow is it?" unless one wants to indicate a prior expectation that the lake is of small depth. The notion on conjunctivity (including binary opposition) is harder to grasp. Witkowski and Brown indicate that while one might think it possible to devise terms to reflect small, middle-sized, and large items along a size-dimension (e.g., "wug" to refer to small animals and "mammal" to refer to large animals, and a third term to refer to medium-sized animals), the principle of conjunctivity doesn't allow this. It also doesn't allow the combining of the extremes of a dimension into a category leaving out the middle-sized elements; this would make the dimension "circular" and probably would tend to destroy the linear dimension that perceptual comparisons have isolated in the environment. However, there are rare instances where this does occur. Binary contrasts do preserve the principle of conjunctivity and so are found in many languages. To actually name a dimension by its middle region apparently never occurs; this also is implicated as conjunctivity by Witkowski and Brown (1978, p. 443). I would like to point out that a mathematician would say that a linear dimension has a true zero point and an unbounded upper limit; that is, it is bounded at one end and unbounded at the other end. But a middle region of this dimension is unbounded at its "lower" end and similarly unbounded at its "upper" end. It is a very slippery beast to name; hence no language family names dimensions in that way.

In short, there are perceptual aspects of exploring an environment that lead cognitively to the isolation of a few guiding principles out of which a language community constructs and selects its lexicon. The particular things that get named, though, and the exact way in which the environment gets "sectioned up" can differ across languages and cultures. What is invariant is the underlying process. Similarly, for other aspects of language, we develop expectations about normal routines that a culture engages in. These routines may have a name but they need not, because the perceiving human being still internalizes the regularities of sequences and co-occurrences in the routines and stores some type of cognitive Schema for this routine. The process that leads to the internalized routine is probably the same for all cultures, but the contents and forms of such routines will differ across cultures. When human beings from different cultures try to communicate, they will assume that they share similar content-based schemata for processing and organizing the world, whereas actually we human beings share only the similar processes for organizing the world. That is one source of miscommunication. Some of the work of Cole and Scribner (1974) indicates that one attempts to reflect the differences in the content-based groupings of objects in the culture and that the psychological processes that are studied for the culture-appropriate grouping are found to be similar.

Interactions of Language Code and Register Differences: Its Cognitive Aspects

Hall, Cole, Reder, and Dowley (1977) found an interesting interaction between the dialect in which a story was read to a child and the ability of the child to retrieve information in a free recall of the story. Black children who spoke predominantly Black English were better able to recall the details of a story if that story had been presented in Black English as opposed to standard English. Exactly the opposite occurred for the white students--better recall if the story was presented in standard dialect as opposed to black dialect. The two groups recalled the same amount of information correctly when the story had been presented to them in their primary dialect. The recall of white students was especially depressed when the story had been presented in black dialect. These facts suggest that the ability to "frame" a recall (to use a story schema in the recall) definitely interacts with the language code in which the story is presented. Thus the ability to keep track of where one is with respect to the underlying story schema (see Mandler, 1978) is interfered with if the language code is relatively unfamiliar; this in turn affects the ability to store and retrieve the information when it comes time to recall the material.

Hall and Freedle (1973) presented similar results at the level of recalling individual sentences presented either in black or standard dialect. Williams and Rivers (1972) also found that the apparent size of a student's vocabulary is dependent upon what language code the words are presented in; for black dialect speakers, if the test is administered in black dialect, this significantly increases the estimate of vocabulary knowledge in contrast with scores obtained when the test is administered in standard dialect.

Hall and Freedle (1973) examined the implications of how the dialects are stored and accessed psychologically. In their sentence recall task they reasoned that if positive correlations are obtained in retrieving the syntactic forms (correlations were computed across forms within a dialect, and similar forms across dialects were also computed), such a pattern implies that these syntactic forms make a coherent system. Also zero or very small correlations across systems imply separate storage of the two dialects.

What they actually found was rather complex. For the older children tested (eight- and ten-year-olds), there was strong evidence that black and standard dialects formed two distinct systems; but there was evidence of complex interconnections across the two dialects (some correlations across dialects that were consistently negative implied some form of cognitive interference). In general though, the cross dialect correlations tended to approach zero as was expected if the two dialects were stored as separate knowledge systems. The younger preschool children (five-year-olds) showed evidence that both dialects were still cognitively represented as a single knowledge system. This was deduced from the generally large positive correlations both within and across the two language dialects that the children were tested in. It appears that exposure to the school system may have been a significant contributor to the cognitive separation of the two language codes.

Other studies suggest that some form of performance interference exists when the nonpreferred language code is the basis for evaluation. With respect to reading comprehension, Stewart (1969) presented the following example. In standard English "His eye's open" may be misinterpreted by a black dialect speaker to mean that both eyes are open because it resembles the black dialect sentence "His eyes open" more than it does "His eye open"--this latter sentence though is the equivalent of the standard dialect sentence "His eye's open." Stewart also suggests that "He will be busy" may, to a black dialect speaker, be misinterpreted as implying habitual action because of the use of "be" in black dialect to signal habitual action.

If Stewart's conclusions seem unlikely, just consider the results obtained by Ruddell (1963) and Tatham (1970). They found that standard English-speaking white children better comprehended material written in sentence patterns that more closely approximated their oral language patterns. This is true probably because these patterns were more familiar to them. Familiarity with the language code and ease in using it as a frame to aid in comprehension and recall are then very subtle because habitual ways of organizing a sentence provide a better schema to follow than grammatically equivalent patterns that are less frequently used. In like manner Stewart's ideas would suggest a similar conclusion.

Approaches to Experimental Ethnography

Anderson (1977) has engaged Anglo children (upper middle class) of different ages in semi-controlled settings (family versus classroom versus playing doctor) and varying the kinds of roles played in each setting in order to study the variety of speech styles that each child has in its repertoire at a given age level. This included studying different registers (e.g., using a "baby-talk" register for some situations versus using a more formal "grown-up" style for other situations). Increased flexibility in role playing with age was noted; increased range of controlling different speech registers was also noted. Three situations that were studied varied greatly in their difficulty for the young children; playing the teacher's role properly through register and grammatical choices and playing a "foreigner" role in other settings proved to be somewhat beyond the skills of the young children. Hence the schema for appropriate role-playing of these "types" had not yet been internalized to yield adequate speech productions. Studies of this type using bilingual subjects of varying degrees of proficiency and varying ages would be very interesting. Are registers that are known and used in language easily transferred to the less familiar language? Or must all of the stages be moved through in the new language?

Straker (1978) studied the use of formal and informal speech styles in semicontrolled settings. The interaction of role, setting, and topic was carefully controlled by the experimenter in order to test predictions stemming from the theoretical work of Fishman (1972). Straker examined eight situations to determine which language code (black English, or standard English, or a mixture of the two) would be used to advance new information on a topic for each social situation. The "intimate" situations typically elicited black English, and topical additions were often made by spontaneous turn taking (a new speaker would introduce new additions). But in the "formal" social settings, less black English was used and new information was advanced by asking questions. Straker also reports that of the three variables studied--topic, interlocutor, and setting--only the first two were significant factors in eliciting the use of standard or mixed dialects. But all three factors were significant in eliciting the use of black English. It seems probable that one can consider the results of this study to demonstrate that subjects were unconsciously using a guiding "schema" concerning appropriateness of use of language code and social turn-taking rules to smoothly unfold their conversational interactions. These schemata are probably a reflection of co-occurrence regularities within the language community, and this co-occurrence favors the gestalt learning of a schema that serves to monitor decisions about what rule to use next, whether a new topic elaboration is legitimate, and so on. Without the schema as an overall guide, the thousands of decisions that would have to be made de novo would quickly overwhelm the limited human capabilities to handle the information. Thus schemata serve as a short-cut solution to information overload. One need only monitor which schema is appropriate at a given moment in order to determine whether one is using the "right" code (etc.) or not.

Natural inquiries into the likely patterns of intonation that have caused miscommunication do not by themselves fully convince those trained in experimental approaches. It might be useful here to indicate that an intonational experiment with groups of various minority and majority subjects can easily be designed so as to remove lingering doubts about the critical features that lead most often to miscommunication. If intonation patterns from a language other than English persist while speaking English as a second language, we should like to inquire whether listeners of the same background as the speaker, versus listeners of different backgrounds, will be able to identify the intentions of the speaker to the same degree of success for a given intonational contour. This becomes a signal-detection experiment in the classical psychophysical tradition (Swets, 1964). In one variant a subject can be asked to decide, "yes" or "no," whether the speech sample represents the signal "hostility" as the underlying intention (see Table 1). An alternative design would be to present several intonational contours and ask the subject to identify which one represents "hostile intentions"; this would be a forced-choice signal detection design. From the point of view of the speaker, we can uniquely know a priori whether the speech sample does contain the signal or does not.

One can vary the semantic signal that is to be identified: instead of "hostility" one can inquire about "irony" or "pleasantness" or "mildly insistent," etc. The population that shares the background of the speaker serves as a check of the accuracy with which this population can correctly identify the speaker's intentions as opposed to how well other populations with different backgrounds and different intonational schemata can identify these same intentions.

In signal detection designs, the strength of the signal is often varied. In the above suggested experiments this can be done as follows. One can take a simple phrase such as "Come here" so that there are degrees of insistency present. "Come here" spoken mildly, then again recorded with more urgency, then again recorded as very insistent. Call these A, B, and C, respectively. Then in a forced-choice design the "signal strength" between A and C is greater than the difference between A and B or B and C. It should be easier to correctly pick which one of the pair (A, C) contains the "hostile" signal as compared with the pair (A, B) or the pair (B, C). This should be true for members sharing the same language background as the speaker and for people who come from different backgrounds (this assumes that there is a certain invariance in intonation cues across languages in spite of subtle differences).

Table 1

Intonational Experiment: Yes-No Design

		Listener's Task to Decide:			
		Same Cultural Background		Different Cultural Background	
		Is Signal Present?		Is Signal Present?	
		"YES"	"NO"	"YES"	"NO"
"Small" difference between "signal" and "no signal"	Known: Speaker intends hostility (signal present)	95%	5%	80%	20%
	Known: Speaker does not intend hostility (signal absent)	5%	95%	40%	60%

(all entries are hypothetical)

		Same Cultural Background		Different Cultural Background	
		"YES"	"NO"	"YES"	"NO"
Larger difference between "signal" and "no signal"	Known: (signal present)	99%	1%	90%	10%
	Known: (signal absent)	1%	99%	15%	85%

(all entries are hypothetical)

Intonational Experiment: Forced-Choice Design

	Signal is present in: (choose one)	
known: signal present; signal absent	1st interval	2nd interval
known: signal absent; signal present	1st interval	2nd interval

Thus, if the intentions are widely spaced with respect to an underlying dimension of say "insistence," the difference between the Indian bus driver saying "exact change (pause) please" to represent clarity and saying "EXACT CHANGE (pause) PLEASE!" in a very insulting way (consistent with his norms of speech) is here hypothesized to be one of such degree that even a majority Anglo would be able to detect which is which.

We see that the notion of "frames" or "schemata" are ways of designating semiformalized knowledge that exists in gestalt clusters at many segments of culture. It represents ways to store and retrieve grammatical language codes, ways to represent social knowledge of when one is allowed to speak, what one could say, how one should say it (intonation patterns), whether one needs to answer questions, who has the right to ask questions, how to formulate some jokes (e.g., by violating language community norms where the violation is intentional and all present realize that; hence one is joking); and so on. The nuances of how we use this knowledge are seemingly endless. This raises in turn questions of how this highly particularized knowledge is ever learned (see Anderson, 1977; also see Freedle & Lewis, 1971, 1977; Lewis & Freedle, 1973).

Teachers may learn to become sensitive to these frames as they exist within the majority culture and as they exist within subcultures. In this way the teacher can minimize the many instances in which misunderstandings can occur through gestures, glances, intonation, choice of speech register (emphasis for clarity or for scorn), choice of discourse genre (story telling versus expository form), choice of language code, choice of whether or not to code-switch, and so on. Students may also be interested in learning how these various patterns of communication are employed in different cultures. This knowledge may help them to understand whether a teacher is necessarily abusing them or whether they have in turn misinterpreted the contextual cues of the majority culture. Perhaps the bright spot in this entire chapter is the surprise that people have upon discovering how they use these cues to interpret messages. This surprise can generate interest and be a cornerstone for generating very important classroom discussion. Furthermore, it may generate motivation for learning some of the skills that the majority culture values, be it reading, writing, or speaking in standard English.

One might feel that "schema" or "frame" has been used too freely and too often so that it applies to almost any knowledge area, be it phonology, the lexicon, the clusters of relationships across groups of words in the lexicon (e.g., the relationships that bird in our language implies such other lexical items as feathers and wings; hence groups of lexical items in the vocabulary are viewed within a community as "belonging" together), grammar, and cultural knowledge (Freedle, 1972, p. 203). Yet schemata function not only to correct probable errors (as in mentally correcting a slurred word that we have heard either in isolation or embedded in a topical context so that a correctly pronounced word mentally replaces it) but also to fill in missing information and the speaker assumes we must know since we share a similar knowledge background.

With regard to error detection and correction, if the permissible range of elements has just two patterns, 00011 and 11100, but the pattern that is heard is 10011, we (a) decide that an error has occurred, (b) then search the permissible patterns for the pattern most similar to the received one (e.g., 00011 is more similar to 10011 than 11100 is), and (c) conclude that 00011 was the "intended" signal. We probably do semantic error correction when we listen to someone from a slightly different subculture: the knowledge routines that culture x knows may not perfectly match ours, but we apply a likelihood judgment in order to match the most likely pattern of permissible patterns to what we listen to. Thus in intonational-tone cluster matching, the English woman getting on the bus matched the slightly deviant tone-clusters produced by the Indian bus driver to an item in her set of permissible intonational patterns, and having made this likelihood match, she drew the incorrect conclusion concerning the driver's intentions. Note that in a sense she tried to correct the apparent error (the error being that the situation really did not call for hostility on the driver's part), but the closest match that she could find--given that she did not explicitly probe the situation further for obtaining new and crucial information concerning the driver's real intentions--was to assume that the intonation pattern was close enough to her set of intonational schema patterns to conclude that he very likely was trying to insult her. Thus error correction sometimes produces other errors, especially across cultures. The simplest way to reflect this complexity is to use schema theory on the set of possibilities. This is an important point--let me rephrase the argument. She scanned at a low level of relevance--the intonational. She did not think to scan at the larger situational level to realize that the situation did not really call for insult. Such a scan would have suppressed the "error" detection at the lower level or would have led to an overt questioning of intentions, "Have I offended you?"

Error correction attempts at the syntactic level are also made when we hear what seems like a grammatical error (e.g., "Don't nobody know" might be responded to by "Does that mean that someone knows?"). Again, an array of permissible alternatives within the listener's knowledge repertoire is scanned for the "closest" alternative, but in the above case the "error" was only apparent and no correction was necessary. Error detection and correction at the highest communicative level includes sudden shifts in apparent intentions (from pleasant to hostile or from pleasant to indifferent). One might also detect deviations (errors) in aesthetics ("Why are you being so crude?"), which is to say sudden shifts in values; sudden deviations in routes or pathways leading to a goal (e.g., "We want to get to route 22, why are you distracting me with your endless jokes?"); or sudden shifts in the goal itself ("I thought we came out to look at chairs; why are you looking at jewelry?"). Sudden detections and suggested corrections in real or apparent semantic-pragmatic errors at many levels of interaction can and do occur in communications between individuals who share different cultural backgrounds. For example, in some of the above we have seen that Indian children's intentions or goals might be misinterpreted if they asked the teacher too many questions, if they failed to answer questions directed to them ("Don't you want to learn?"), if the pathways they pursued were questioned ("Stick to the topic; give me just the facts"), or if the social values they had were questioned ("Don't you want to correct the answer that Mary gave?").

Inquiring Systems as Schemata for Modeling Miscommunications

In the above sections, I have repeatedly used a few concepts such as selection of a dialect from the repertoire or selection of a particular speech form (a question or imperative) from a set of possible forms to advance some goal, e.g., "Ask a question at the ticket counter if you want to know (goal) when the next train leaves." Notice too that the effect of carrying out a particular choice of language directed at a particular person in a particular location for a particular goal has an outcome. Some outcomes are negative following miscommunication with a further possible outcome of social isolation or verbal abuse. Other outcomes, however, are probably mildly successful achievements of goals and information exchange, especially between members who share a similar speech community (who share a similar schemata of what is significant in the world, what values must be placed on events, how events are to be segmented, etc.).

All of these terms--outcomes, sets of possibilities, values of outcomes, likelihood of a negative outcome, goals, settings, participants--all can be brought together in more organized fashion by considering how to use Inquiring System Theory as applied to human communication and human problem solving, be it through verbal or nonverbal channels (see Freedle, 1974, 1975, 1978, for a description of how to apply Inquiring Systems to developmental issues as well as to the analysis of dialogue and extended monologues). The original invention of Inquiring Systems was due to Churchman (1971), who sought a way to mathematize different kinds of problem-solving situations. He classified situations into five basic forms which we shall describe below: Lo, Le, K, H, or S.

To get an intuitive grasp of why such formulations can be useful in analyzing miscommunication, let us consider an example used earlier.

Bus driver: "Exact change, please."
Customer: "What did you say?"

Bus driver: "Exact change (pause) PLEASE."
Customer (acting insulted): "The nerve!"

We shall attempt to expand this seemingly simple exchange in terms that are of concern to Inquiring Systems, namely goals, problem-type, pathways to goal, sets of alternatives, outcomes of attempts, and values of outcomes. (See Table 2.)

From event 1 through event 8 we appear to have a cooperative principle in operation; both participants want to be helpful and to say things that are truthful and helpful. From event 9 through event 11 we have what may be a non-Gricean principle in operation since both participants are either angry or puzzled and are not communicating in order to be cooperative.

The cooperative stance of events 1 through 8 leads to problem states that are socially stereotyped and highly consensual--hence they are a gestalt Lo system.

The above two individuals though are both somewhat knowledgeable about each other's culture; the mismatches are traceable to "low-level" schema of intonation differences across their respective first languages. An example of a high-order schema difference will now be shown. Here we have two individuals who almost from the beginning of the conversation exhibit repeated failures to use the same molar organizing schema (inquiring system mode) in defining what problem they are dealing with and what types of responses are considered appropriate in solving the problem. The example comes from an interpretation (Freedle, 1975) I gave to a dialogue reported by Cole and Scribner (1974).

Experimenter: "At one time spider went to a feast. He was told to answer this question before he could eat any of the food. The question is: Spider and black deer always eat together. Spider is eating. Is black deer eating?"
(Comment: this discourse format intends to establish a pure logic to the string of propositions. The solution to the problem requires an inference.)

Subject: "Were they in the bush?"
(Comment: the subject does not follow the presumed logical format of the experimenter because this violates the cultural mode he typically uses. He attempts to place the premises on a factual basis not an abstract logical basis by concretizing information regarding location.)

Experimenter: "Yes."
(Comment: here the experimenter appears to have accommodated

Table 2

	Main Events (verbal and nonverbal) (covert & overt)	Representative of Culture 1 Bus Driver: participant 1 (P1)	Representative of Culture 2 Customer: participant 2 (P2)
GENERAL COOPERATIVE ORIENTATION	1. P1 stops bus.		
	2. P2 gets on.		
	3. Covert event: P1 thinks a problem state may exist.	Covert problem: believes a problem state may exist Goal: avert bad situation where P2 may expect P1 to break a large bill.	
	4. P1 says something to solve problem.	Pathway activated: decides to avert possible problem by verbally saying "exact change please" "spoken softly with no definite pause between words).	
	5. Outcome - new covert problem because P2 couldn't hear clearly.		Outcome of 4 (neutral value): Subproblem: P2 didn't hear what P1 said. So, new Subgoal: ask for clarification.
	6. Says something to solve problem at 5.		Pathway to goal: select from wide options of how to ask this: "What did you say?"
	7. New problem state: how to satisfy the request for clarification	Perceives request for clarification as requiring a repetition of content but infers that he must speak more clearly and loudly (formal register under noisy background conditions). Hence, this is another subproblem: it has as its goal clarification; the pathway to this goal is chosen by repetition plus intonational clustering for emphasis and clarity according to his native cultural rules for speech:	
	8. Pathway to problem at 7.	Hence he says: "Exact change (pause) PLEASE"	
GENERAL CONFLICT ORIENTATION	9. Outcome - new covert problem state. (Hegelian conflict)		Outcome of event 8 (negative value) Applying intonation rules appropriate to P2's sociolinguistic community; she believes P1 is trying to insult her (negative outcome.
	10. P2 tries to deal with event 9.		new goal: insult P1. Pathway to new goal: select verbal insult She says "The nerve!")
	11. P1 is puzzled by what P2 says.	Cover problem: Why did P2 say that? Why is she angy?	
	12. P2 may plan (new goal) to file a formal complaint with the bus company.		Covert: I'm not going to let him get away with that.

to the subject's higher-order organizers for interpreting the flow of communication.)

Subject: "Were they eating together?"
(Comment: the Le inquiring system mode imposes a broad frame upon statements such that only a pure logical format must be used to arrive at answers to the problem, but the subject here again tries to make the assertion specific to a particular setting or occasion. Hence the subject is using a K mode that requires placing a data specific set of assertions in line with a more formal system of logical possibility.)

Experimenter: "Spider and black deer always eat together. Spider is eating. Is black deer eating?"
(Comment: the experimenter tries to reestablish a pure Le problem mode to link all the propositions together. To honor this frame one must produce a logical inference based upon the propositional information alone. Specific information concerning specific situations is irrelevant.)

Subject: "But I was not there. How can I answer such a question?"
(Comment: the subject again rejects the Le frame and reintroduces new factual information concerning his own absence from the event. Hence he reestablishes a K frame for linking his own propositions together and to link them with the assertions of the experimenter. What is important in this exchange is that the miscommunication has occurred at a level not typically found in members of minority groups who already live within a larger dominant majority culture (see Hall & Freedle, 1975, for other insights into this distinction.)

Contextual cues across different communities may involve different systems of gesture, different intonation patterns, different fields of pragmatic interest. They may further vary in rules for which signal system dominates or combines with the values assigned to other signal systems (are eye-winks more important than verbal propositions in getting at what a person really thinks? Are "tense" body positions and a person's physical acts more important than verbal propositions in helping to decide how to interpret a person's attempts at communication?). Cultures probably differ in many ways in their rules of combination, rules of dominance, and number of possible systems that contribute to communication (e.g., some communities have "whistle" languages by which to communicate; others have a drum language). All of this needs further study.

Whether this must alter how educators are trained, whether it must alter whether social hierarchies (of teacher-student, king-servant) should be altered in dealing with students who come from less-hierarchical social systems are all questions for the future. They will not be easy to answer. Schemata operate in interpretation by allowing us to fill in missing (unspoken) slots of the Inquiring System. Thus if one is in a Hegelian (conflict) system, one uses the semantic slots appropriate to a conflict-schema in order to help guide the selection of what to say next (it alters the content), and how to say it (one might use direct rather than indirect means to convey information. For example, if irritated one may say "I told you to open the door, now open it and I don't mean maybe", but indirectly one might say in a cooperative stance "Please would you mind opening the door?" or "It's a little drafty in here."

Inquiring Systems as a Model for Studying Communication and Culture Change

Four of the five major systems will now be sketched. Each is intended to be a particular way to solve a problem.

The Le system is a formal symbolic system. It builds a formal mathematical representation of problems that start with a set of primitive analytic truths (axioms or propositions), and, from these, constructs a network of more general and formal propositional truths, much as proofs are derived from elementary axioms.

Lo systems represent experimental consensual systems. They build upon an empirical inductive representation of a problem by starting from a set of empirical observations (raw data, sense data) and construct a network of increasingly more general sets of facts, inductively arrived at. Lo systems are judged to be "true" or "factual" if there is widespread social agreement on a problem by a group of experts (the "experts" may be just ordinary members of a particular cultural group). Notice that Le systems are theoretically and deductively derived problems, whereas Lo systems are empirically and inductively derived problems. A "true" and correct decision in a Le system is a logical deduction, whereas a "true" or correct solution in a Lo system is an inductively arrived at social consensus.

K systems consist of mixtures of Lo and Le systems. When the two components, Lo and Le, are complementary, the total system is a standard K system; but when the two components are contradictory at various points, then we have an H system (a conflicting or Hegelian system).

"Truth" in a K system is the degree of correspondence between the Lo and Le subsystems; an example is a scientific problem that merges the theory (Le logical component) with the observed data (the Lo or empirical component). If the results agree with the theory, one is tempted to regard the theory as "true."

Many *K* systems are extremely complex and ill-structured (see Mitroff & Sagasti, 1973, for a discussion of inquiring systems). Many of the elements of a *K* system may be quantitatively unknown (e.g., the *probability* of certain events may not have been studied, and the likely *outcome* of performing a group of studies on a certain parameter may be unknown). Many social problems are ill-structured or "wicked" in this sense.

Conflicting *H* systems may have serious discrepancies between their subcomponents. For example, if we have two conflicting theories and want to assess which one is "better" with respect to some observations (data), we have a total *H* system. An example is the contrast between a Marxist theory and a capitalist theory in explaining an observed sequence of facts in the market place.

Now let's consider a system's view of analyzing language interactions. Facts of the environment (the empirical part) are interpreted through a cultural frame (a set of guiding assumptions [the theory part of the culture] and values about the world and about social structure); this subculture presents a *K* subsystem. The other culture that interacts with the first culture is another *K'* subsystem since members of this community also have a different set of guiding cultural assumptions (the "theoretical" component that guides everyday facts and situations typically encountered, the latter being the empirical elements of the *K'* subsystem). Together *K* and *K'* subsystems may form a Hegelian or conflicting *H* system when people try to communicate about very simple "facts." A larger representation of this would list different levels of *schema* that are *little systems unto themselves* since the regularities of the schema are ways to interpret "facts" encountered in the environment that are pertinent to that schema. Hence any given culture is really a *whole hierarchy* of *K* systems depending upon what sets of schemata are being looked at. Put together, the parts form a gigantic *K* system or, if the society is very complex, the subparts may together form a gigantic Hegelian or *H* system. This can easily occur in a complex industrial society which has a population representative of dozens of different countries and cultures. It is less likely to occur in small isolated communities, which are more likely to be represented by a *K* system..

As mentioned above, *Lo* systems are strongly social consensual; hence "intimate" settings probably can also be designated as *Lo* systems; this decision carries with it an implicational network of appropriate values, pathways to goals, and outcomes that are appropriate to employment of that cultural schema. Given that other language community members also monitor at this broadly based gestalt level, they also apparently use the co-occurring contextual cues that are appropriate and specific to that schema. The failure of members from different communities to use the same schema, then, accounts for the breakdown of smooth communication;

furthermore, the gestalt nature of many of these language schemata probably also accounts for the apparent inability of the speakers and listeners to know what went wrong with the communication--the gestalt patterns are learned holistically and tend to resist piecemeal analysis. (A scientist of language, however, is capable of breaking the gestalt down into its components. Thus there is no contradiction here in claiming that language communication can be fruitfully studied by means of inquiring system theory.)

Just labeling events in communication does not justify introducing these systems. But when we consider that likelihoods of choosing the best interpretation are under consideration, then we begin to see how the whole formal apparatus of a decision theory is needed to coordinate and interrelate in a sensible manner these many facets of communication (values, goals, outcomes, etc.), with the many facets of communication types (debate modes, joking sessions, fantasy sessions, rigorous rituals, etc.). Likelihood estimates are absolutely essential to bringing our scientific understanding of the process of communication to a fuller more mature level. We especially need this increased level of complexity if we are to keep track of cultural mismatches and the many levels of frames that can contribute with various probabilities of occurrence to these miscommunications.

We also need this complex decision theory if we are to say something about practical ways to monitor the success of educational change in practice with respect to bilingual interactions in the classroom and to pinpoint several sources of continuing difficulty and sources of success.

A decision theory of the above five types has the breadth to handle most of the complexities that can occur in communication. The theory serves as a template against which to assess the completeness of an analysis. That is, have we accounted for values, goals, pathways, outcomes, and decision type in scoring our protocols, have we assessed the likelihoods of competing solutions from the participants in the communication setting, and have we determined other pathways, such as other variants or language strategies, that they might have pursued? By studying individuals and groups intensively one might be able, as did Agar (1979) and Tannen (1979), to characterize prevailing strategies of cognition, prevailing frequencies of employing each strategy, and so on. This, of course, is ambitious, but the next generation of language specialists may find that it is a necessary one in order to successfully compete with computer scientists who are already well on the way to modeling and studying these nuances of language behavior.

A Way to Characterize Educational Change as Cultural Change from a System's Perspective

Any cultural change (in values, language code, ritual detail, etc.) can be viewed here as a change in system. But one must be careful to designate likely sources of cultural change. If the change is from within the community and is "decided" upon by them as permissible, this clearly is different in kind from change that is imposed from without. Changes in the mainstream education system, which tries to accommodate to minority cultures and minority language rules, have both aspects. Partly, a decision among educators (*within* the mainstream culture) is made to preserve the ideals and traditions of the education system but still to try to accommodate to minority demands. And partly, a decision is made *within* the minority community to demand change in the school system in pursuit of *their* cultural goals. But also, as change is implemented on both sides, there are aspects of change being imposed from *without*--national pressure from ethnic organizations and mainstream groups may be brought to bear on what was previously a local issue. Pressure to change both the mainstream educators and minority representatives is then experienced. So any cultural change in a complex society is a series of system accommodations and assimilations that are occurring simultaneously from within and without, and are occurring simultaneously for minority and majority members. To try to represent this mathematically in a short space is clearly beyond the goals of this chapter. But what I do wish to address is a tendency to oversimplify what it means to try to bring about change in education, since this really is an attempt to bring about cultural change. Anthropologists can readily attest to the difficulty in bringing about even "minor" cultural change, such as use of contraceptives, changes in sanitation, etc. Change that comes from *within* is more likely, though, to be *successful* than change imposed from without a community. *Goals* that are perceived to be presented as "desirable" (goal value and outcome value, to use system terms) to majority members are likely to be *relabeled* as undesirable from the perspective of a minority community. New goals that are generated from within a group are likely to retain their presumptive positive value in terms of achieving the goal (outcome of a pathway in implementing this problem-solution).

A culture traditionally is a system of value-consistent ideas and activities. The schemata that are acted upon every day to carry out useful cultural goals tend to form a consistent system of philosophy, especially for old cultures that have hundreds of years of tradition behind them. New complex cultures, however, are somewhat unsure of their traditions, and the very complexity of an ever-changing industrial culture tends to undermine the certainty and correctness of values we once held as dear. Being the dominant majority culture, and combining this with ambiguity of values tends to create an atmosphere of scapegoating. The overtones of violence and impatience that characterize a good deal of American urban culture lend a special note of urgency to carefully characterize the nature of the problem and the nature of the proposed solutions, be it for educational settings or other national institutional settings.

Hall and Freedle (1975) suggested that the notion of subcultural embedding, where one previously autonomous culture is rendered subordinate in status to a more dominant culture, is a fairly typical characteristic of many minority groups in American life today. However, an interesting exception appears to be that of the native Americans, who have a substantial number of their people still living geographically apart from the mainstream culture. While black Americans appear to have internalized many of the aspirations of white Americans (materialistic acquisitions, a drive towards "progress," etc.), this is not necessarily the goal of the native American whose philosophy of life tends to highlight a non-hierarchic system of human relationships, and tends to highlight a more organic view of the environment; this latter view prevents them from exploiting the materials in the earth in the name of "progress." Minority groups then probably differ profoundly among themselves and with the majority culture with respect to goals, values, pathways to their goals, preferred outcomes to chosen pathways, and the set of perceived ways in which a goal may best be pursued.

These high-sounding assertions serve a serious purpose. Can we expect native American children to alter their interpersonal patterns just so that they can learn what the majority culture values? What will they have lost in the process of trying to adjust to just that particular aspect of their lives--how to get "ahead" in the classroom (but lose their philosophy of human equity) by applying hierarchic power schema to their interpersonal interactions with the teacher. Can they keep school and home separate enough to benefit from a restricted use of the power relationship just in the classroom? But if the goal of native Americans is to acquire some of the comforts of the mainstream culture, must they not consider that some external accommodation to mainstream culture may be a necessity? These dilemmas are painful ones, and simplistic educational goals cannot possibly hope to succeed unless the larger system's issues are worked on.

The formalistic aspects of system merging and system transitions over time have been quantified and studied already. The first task for social scientists is to perform the necessary ethnography so as to imform their work with explicit statements of alternatives that individuals consider--the values that influence their decision making, and the pathways that they habitually pursue (see Agar, 1979, and Tannen, 1979, for a methodology to isolate these habitual schemata). Then they should study the ways in which new values alter old decisions, and do this for both cultures that are interacting, since both must ultimately accommodate to each other's ideas no matter which is the dominant majority and which is the minority culture. Finally, the types of inquiring systems that are habitually used in particular settings, for particular topics, and between particular individuals should be quantified and labeled. In this way, we might hope to gain the necessary data for making rational recommendations concerning a revolution in educational practice.

Concluding Statement

The very diversity, which many mainstream teachers attempt to ignore or deny, could become the source of their revitalization. Endless, safe repetition in a predictable classroom leads to an artificial life (over-schematized life), which, repeated over decades, can lead to emotional and intellectual stagnation. The real world is not Platonic but endlessly varied: languages change, cultures change, great civilizations come and go. Not all deviations from the norm need be threatening to achieve a proper atmosphere for learning. Indeed, tension, challenge, variety, and mixtures of failures and successes keep all of us on our mettle. The creative flow and sense of community that still exist in abundance in American subcultures could become the basis for a rebirth of American ideals. Instead of finding the values and cultural patterns of minority groups an annoying "presence," one could very well rejoice that people still exist who find strong purpose in life for a renewal of the American sense for civic freedom. To bring these values into the mainstream will require that we all partake of the ethnographer's well of knowledge.

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CHAPTER 8

Achievement in Blacks: A Case Study in Cultural Diversity in Motivation

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Few social-behavioral phenomena play so central a role within our American culture as that of achievement. From the earliest development of our society, achievement has constituted both the end and the means of economic, political, technological, and social endeavor. No wonder that the role of the individual in this enterprise, through his motivations, his abilities, his values, and his efforts, has been an important topic for social scientists. An informed perspective on the manner in which individuals acquire the qualities of character and behavior that make them significant contributors to the achievements of society is a fundamental basis for the design of our educational, occupational, and even our child-rearing institutions.

In this regard, one topic that has been the focus of much research and theory is the manner in which individuals and groups may vary in the apparent contributions they make to our achieving society. It is perhaps more a matter of the history of the conduct of inquiry than of its logic in this area that the analysis of diversity has consisted of the observation of differences. Nonetheless, it is largely within the body of research that addresses itself to a comparison of the achievement of racial and other subpopulational groups with that of whites that the accumulated evidence documenting and implicating diversity may be found. And although it is relevant to the understanding that we shall attempt to approach here in regard to diversity in motivation, an interpretation and critique of that history (or, perhaps, philosophy of science) is outside our scope.

Of the several aspects of this topic that are within our potential scope, certain ones have been selected for discourse here while others, particularly those treated thoroughly elsewhere, will be omitted.

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Whatever is the diversity among persons and groups in the motive to achieve, it should strive greatly to replicate the diversity in both the approaches to its analysis and the evidence to which those approaches have given rise. The great abundance of theoretical frameworks aimed at shaping our understanding of this topic has been noted already by Katz (1967). Most of the more recent examples of theoretical models have, largely as an accident of the sociotemporal period, given little systematic attention to questions of cultural diversity. And in some instances (e.g., Weiner, 1970), the narrower limits of the structural and functional variables they attempt to treat, when compared with such classical worlds as those of McClelland and Atkinson, limit also the breadth of the extant evidence on diversity that their frames would permit us to integrate. At the same time, still others (e.g., Atkinson, 1974), for the even further breadth and comprehensiveness that they attempt to achieve, risk in general the status of nonfalsifiability (see Popper, 1959), a characteristic of scientific theories that at least I find fundamentally dissuasive.

The choice of the model appealed to within the present discussion was guided by heuristic concerns more than by a conviction that it is the one by which an ultimate understanding of the subject will most probably be reached. In that sense the categories of factors that constitute the corpus of the Atkinson/McClelland model of achievement motivation provide a handy framework within which to summarize the major variables among which empirical evidence has been accumulated. In particular, considerable evidence has been amassed by researchers on variables of motive/drive, expectancies, values, and aspirations for one very salient population of characteristic "difference"—blacks. And it will be at least the implicit conviction here that analysis of the structural and functional features that are most fundamentally at work in evidencing the interpopulational and intrapopulational diversity of blacks will be those to which an analysis of other populations would appeal. Reflected here, as well, is the conviction that we should begin by summarizing and evaluating the data that past research has contributed to the literature, and that our ultimate effort to frame an understanding of diversity in motivation will do well first to attempt accommodating what we already can see before directing us forward to where we might look. Implicit within this approach is the assumption that I will try to offer support for: that an effective understanding, at least in part, of motivational diversity, while not evident from the interpretations, is interpretable from the evidence of past research. Nonetheless, since so much may be subsumed under this topic heading, some of the inevitable by-products of my attempt at integration may be oversimplification, omission, and arbitrary labeling. These sins, where committed, are hereby confessed, while our larger goal shall be to bring a diverse field of research and thought into a somewhat more critical and comprehensive focus.

Several divergent aspects of the topic of achievement may be discerned in the existing psychological literature. Perhaps the most salient is the concept of achievement motivation. Whether or not the construct of motivation is so broadly conceived as to subsume such components as achievement values, aspirations, and cognitive-evaluative operations seems generally a matter of theoretical taste. In the present discussion I will attempt to separate these topics under the general heading of motivation, although in some respects they might be considered to be separate from the construct of motivation, rather than simply different conceptions of it.

Another major aspect of the topic of achievement in blacks is the phenomenon itself. By this I mean the extent to which a definitive pattern of achievement outcomes or behaviors may be identified from empirical evidence, and its characterization may be seen as the direction and the strength of its replicability. In a sense, this question precedes that of achievement motivation, since we may generally regard the examination of the construct of motivation as an attempt to identify the causal bases of the achievement phenomenon. However, even here it may be important to distinguish different levels of analysis: that of achievement outcomes from that of achievement behaviors.

Achievement outcomes for blacks are those criterion events that are characterized by the presentation or acquisition of a contingent product, real or material, or nonmaterial and symbolic. Socioeconomic status, level of education, level of income, achievement test scores, grade point average are examples of the sort of outcomes that we should distinguish from achievement behaviors themselves. On the other hand, achievement behaviors should include only those directly observable aspects of actual outputs from the person, such as the rate and strength of responding (e.g., speed, total quantity of omissions).

The reason for this distinction is quite simple. Although behavior may ordinarily be a contributing factor in achievement outcomes, it is normally not a sufficient element. Since most achievement outcomes take the form of some sort of reinforcement (whether it has primary or secondary value), an evaluative process must intervene between the act upon which it is contingent and the resultant consequence of that act. Teachers assign grades to academic performances; employers attach payments to occupational behaviors. Where such an evaluation process is biased, the act or performance of the individual may not even be a necessary element. In other words, behaviors are not even likely to account entirely for achievement outcomes except in an errorless evaluation system, and in some instances may account for virtually none of the variance in achievement outcomes where the evaluative system is characterized by systematic biases.

The status of blacks as shown by the major criteria of achievement outcomes within our society is well known. A similar status is generally evident with regard to the outcome criteria of academic achievement. For example, blacks have been found to attain scores on standardized achievement measures that average one standard deviation below those of whites (Coleman, Campbell, Hobson, McPartland, Mood, Weinfeld, & York, 1966), with that gap showing a marked increase (blacks becoming more inferior) over time, particularly for school children in the South. Similarly, Jones (1967) found that on three tests of aptitude more than 85% of blacks scored below the national norms, and that in general twice as many black students as white students fell below these norms.

What is more crucial for us to consider here is the extent to which such outcomes are generalized and consistent, or can be traced to the behaviors of black persons. Therefore, we shall consider the evidence accumulated regarding the achievements of blacks within controlled observational and experimental contexts.

Achievement Outcomes

Relatively limited attention has been paid by psychologists to such global achievement outcomes as socioeconomic status, income, and educational level (as dependent measures). Even within the domain of academic achievement, the attention given to such measures as grade point average is far outweighed by analyses of performance in specific activities, such as digit-symbol and word-dropping tasks. However, the evidence that should be remarked upon is most important for the specificity that it has demonstrated even within the area of achievement outcomes.

Coleman and his associates (1966) found that the achievement level of black students on standardized measures was related to the child's sense of control over the environment, and that blacks showed higher levels of achievement as the proportion of white students enrolled in the school increased. Similarly, Epps (1969) found that ninth- to twelfth-grade black children who perceived limited opportunities for themselves (low sense of "self-power") had lower grades and lower vocabulary-test scores than did blacks who perceived their opportunities to be great (cf. also Lessing, 1969).

In a study of the correlates of academic success in college, Bradley (1967) surveyed a sample of 929 black undergraduates in newly segregated white institutions in Tennessee. She found that one of the strongest correlates of grade point average for these subjects was the level of morale, or general satisfaction with school and self. Wolkon (1971) compared the academic success of black college students who professed an identity as Africans with the success of those who expressed an identity primarily as Americans. American-identifiers were found generally to have higher grade-point averages than African-identifiers, although the groups had been equated for academic aptitude and past performance.

Coffin, Dietz, and Thompson (1971) matched on age and intelligence 30 black tenth-grade students with high grade point averages ("high achievers") with 30 black students with low GPA's. They found that one very significant difference between the groups was the favorability of their attitudes towards teachers and school. High grade point averages were associated in blacks with favorable attitudes, while low achievement was associated with relatively negative views. On the other hand, Greenberg, Gerves, Chall, and Davidson (1965) found that black poor achievers, as assessed by their scores on the Metropolitan Reading Test, made more favorable semantic differential ratings at school than did blacks classified as good and average achievers.

Achievement Behavior

Somewhat more direct measures of achievement behavior have been offered in the form of digit-symbol tasks (Katz & Greenbaum, 1963), information seeking (e.g., Williams & Stack, 1972), marble dropping, and maze and puzzle games (Solomon & Houlihan, 1972). However, the evidence amassed at this level of analysis of achievement in blacks indicates a degree of specificity similar to that indicated by achievement outcomes.

Solomon and Houlihan engaged 75 black fifth-grade students in "incomplete drawing" tests and in maze-tracing and puzzle completion tasks. Contrary to those investigators' general expectations, task performance was found to be characterized by more time spent, greater expressed interest, and higher overall quality of product when the experimenter was uninvolved than when the experimenter was closely involved in assisting the children. Moreover, according to their theoretical model, Solomon and Houlihan's subjects showed a marked tendency to be intrinsically oriented in achievement behavior overall, and to perform largely as a function of the degree of independence with which they were allowed to pursue the task.

In a memory task, black seven- to ten-year-old boys were found to perform better and to learn more rapidly with a black tester than with a white tester, and with approval as compared with disapproval (Katz, Henchy, & Allen, 1968). And in a similar study, Allen, Dubanoski, and Stevenson (1966) found that the rate of marble-dropping on the part of black children was significantly affected by the race of the experimenter. Rate of performance increased more dramatically with a black experimenter than with a white experimenter, and even more so under conditions of praise than under conditions of criticism.

Katz and Greenbaum (1963) investigated the digit-symbol task performances of black college students under conditions of high and low stress (by threat of shock, either severe or mild), and within environments characterized as white (presence of white coworker and test administrator) or as black (black coworker and tester). Subjects tended to perform better overall within a "white environment" than within a "black environment." High stress evoked better performance than low stress conditions only when the racial environment was characterized as black, and performance became relatively depressed when high stress occurred in the presence of a white coworker and tester.

In an attempt to investigate the specificity of the effects of locus of control upon information-seeking behavior in black college students, Williams and Stach (1972) introduced the factor of task-relevancy. One would generally expect to find that those black individuals who perceived themselves as the primary causal source of their reinforcement experiences (Internals) would engage in more assertive achievement behavior than individuals who perceived external factors as the primary determinants of their reinforcement outcomes (Externals). However, black Externals in that investigation were found to engage in information seeking much more like that of their Internal counterparts when the task involved an issue of high relevancy (the contribution of blacks to society), as compared with Externals engaged in a task of low relevancy (the role of the vice-president of the United States in national and foreign affairs).

From these various findings one cannot help inferring that the pattern of observable achievement behavior and achievement outcomes under controlled analysis represents a degree of specificity and inconsistency that our earlier overall statistics would not suggest. Although, on the average, blacks clearly represent a lower stratum of economic, occupational, and educational achievement than do whites, the global consistency within the population that would support simple conclusions of trait or dispositional inferiorities is absent from the systematic research. Black subjects have shown the capacity to achieve when their views of the school environment are favorable, when they perceive themselves in control of their environment, when the social context in which they perform is characterized by like-race persons, and when the task is of importance and interest to them. However, what is not clear from these various findings is the extent to which such specificity represents variance associated with the intrapopulational diversity of black individuals, or is variance associated with the vicissitudes of the situational contexts within which achievement is undertaken.

Most of research has addressed the former of these hypotheses. In general, the search for the important moderators of achievement in blacks has focused upon such intrapersonal constructs as motivation, aspiration, anxiety, self-esteem, need for approval, and locus of control. While we might distinguish between those theoretical conceptions that characterize the relationships of such constructs to behavior as direct, and unrelated to those that consider the social-situational antecedents and moderators of such constructs, their essential similarity is somewhat more important. Each would posit that the most direct relationship of cause to effect is between dispositional antecedent and achievement performance, no matter whether that dispositional construct is a trait such as self-esteem or a dynamic phenomenon such as anxiety. We would not suggest that it is important whether one considers the occurrence of the critical causal factor to be global and consistent or highly specific to the situational context within which the individual behaves. However, neither conception falls within an alternative theoretical framework in which the important causal antecedents are presumed to consist of the situational context itself, operating directly upon the observable achievement behaviors and outcomes of the individual. We will attempt to entertain this alternative later in the present discussion, while we turn at this point to consider the major conceptions, along with their empirical support, that fall into a general dispositional analytic framework.

Achievement Motivation in Blacks

Sarason (1972) has pointed out that although there has been considerable agreement among students of psychology that achievement is significantly related to characteristics of personality, it has been less clear precisely which personality constructs are most significant. One attempt to conceptualize the important personality construct related to achievement behavior is represented in the work of McClelland and his students (1953). The construct of achievement needs few such attempts, in part because of the work of Murray (1945) in identifying the various personality and drive components that are represented in the fantasy expressions that people emit in response to ambiguous stimuli. Through his own systematic investigations, McClelland has been able to isolate the tendency of individuals to differ in the extent to which they express imagery related to goal striving and competition with standards of excellence. Such responses in the presence of ambiguous stimuli such as the Thematic Apperception Test items (and related others developed by McClelland) have been shown to relate systematically to overt achievement tendencies and have been interpreted as representing the individual's level of achievement need.

Within this conception of achievement motivation as a learned drive, McClelland has remarked upon the early socialization and resultant personality deficiencies that underlie the failure of blacks to achieve. According to his analysis, blacks have been deprived by slavery of an opportunity to learn the self-discipline and initiative needed for them to seek reward through their own independent efforts. In addition to the learned dependency and absolute obedience that slavery has instilled, McClelland has argued that the matriarchal structure of black families has led to the absence of strong role models of aggressive and competitive striving for black children.

Several investigators have lent empirical support to certain of these general propositions. For instance, Mech (1972) compared the n Achievement Scores derived from TAT protocols by blacks, whites, and Mexican-Americans who were thirteen to sixteen years old, and found that blacks were inferior to the other groups in the need to achieve. Mussen (1953) found that black males who were matched at ages nine to fourteen with white males were inferior in their scores on the n Achievement measure of achievement motivation. Also, black children were found by Minigione (1965) to score lower n Achievement than white children particularly on those TAT items that have no overt achievement cues. Similarly, Rosen (1959) compared black males with Jewish, white, protestant, Greek, and Italian males and found blacks inferior to all of the white groups in the need to achieve. In one way, it is of interest to consider that these investigators represent almost all of the evidence in support of the relative deficiency of blacks in achievement motivation as measured by fantasy responses. What is possibly more crucial to consider, however, is that other evidence suggests that these comparative analyses of the achievement needs of blacks may be flawed by serious methodological error.

Lott and Lott (1963) tested black and white seniors from four high schools in Kentucky on the need to achieve. While they found that there were overall race differences in the pattern described in their research, their comparison of black and white subjects who were matched on I.Q. and parent occupation showed no differences in achievement motivation across those samples. These investigators attributed this shift in the comparative status of blacks to the relatively small sample sizes obtained when subjects were matched on the confounding variables. However, Veroff, Atkinson, Feld, and Gurin (1960) compared 91 black subjects and 1216 whites from a nationwide sample, controlling for the education, occupation, income level, and age of the comparative groups. Their findings were that the percentage of high scores within these samples was virtually the same (43% of blacks and 49% of whites, approximately) when confoundment from variables other than race was ruled out.

Veroff and his associates also pointed out the potential confoundment of TAT protocol comparisons across race samples when the selection of the stimulus items ignores the congruence or incongruence of the depicted person-figures with the racial identify of the subject. Baughman and Dahlstrom (1968) extended this criticism to a consideration of the different value structures that relate to achievement within the specific samples. When they matched their achievement scoring to the standards and values reflected in the communities of the respective black and white samples that they were investigating, they found that there were no race differences in that measure of motivation.

One major underlying assumption within the conceptual proposition offered by McClelland (1953) is that differences in the achievement behaviors of blacks and whites may be traced to differences across these populations in the need to achieve. Few investigations, however, have succeeded in demonstrating a clear relationship between race and motivation, though several have similarly erred in their failure to separate the factor of race from such other variables as socioeconomic status. The overall implication is that black persons may not differ significantly from others in the level of motivation to achieve. However, insofar as research has indicated a reliable relationship between such motivation and achievement performance in whites, we would be compelled to surmise that only a failure in that construct-behavior relationship in blacks can account for convergent black-white motivations in the face of divergent patterns in overall black-white performance.

Some evidence does indeed suggest that the construct of achievement needs is insufficient to account for achievement behaviors and outcomes on the part of blacks. For instance, while Mech (1972) found that blacks scored lower on the achievement measure of motivation than did whites, their level of achievement performance in school (grade point average = 2.6) was virtually the same as that of whites (grade point average = 2.5). Thus the need achievement construct appears as unable to explain congruence in behavior against apparently divergent levels of motivation as it is to explain the opposite. Furthermore, the construct seems as insensitive to individual differences in behavior among blacks as it is to the differences in behavior between blacks and whites. In Wolkon's (1971) sample of American-identifiers and African-identifiers, blacks in the former group achieved significantly higher levels of success (GPA) in college although the two groups were indistinguishable in their measured need for achievement.

One possible explanation for this failure of the need achievement construct to predict achievement in blacks may revolve around the impurities of such achievement outcome criteria as GPA. Wolkon, for instance, observed that grade point averages themselves are potentially confounded measures of achievement, reflecting the perceptions and attitudes of teachers as much as the behavior and performance of students. Green and Farquhar (1965) have offered similar criticism of such achievement outcome measures. One implication, therefore, is that the failure to relate the construct of n Achievement more directly to behaviors may underlie the apparent lack of validity of that measure for blacks.

Solomon, Houliham, Busse, and Parelius (1971) attempted, in part, to address this general issue in their study of the school behavior of black children. Seventy-two black fifth-grade students of lower-class background were observed in several kinds of classroom sessions and in a number of individual problem-solving tasks. These observations were factor-analyzed into six achievement behavior factors: perseverance, performance in divergent tasks, performance in convergent tasks, performance in recitation situations, performance in individual work situations, and general academic achievement. Strikingly, measures of achievement were found to relate significantly to none of the directly observed factors of actual achievement behavior in that sample of black children, including the index of general academic achievement.

It is possible that this failure of the *n* Achievement construct to account either for convergence or divergence in either the achievement outcomes or the behaviors, either among blacks or between blacks and whites, may represent the inadequacy of that measure rather than the invalidity of the construct of motivation in general. However, other measures of achievement motivation have yielded similarly inconclusive evidence of its relationship to achievement behavior in blacks. In one investigation of the effects of achievement motivation upon performance in blacks Epps, Katz, Perry, and Runyon (1971), measured the pre-post gain scores of 86 male freshmen on an arithmetic task. The measure of motivation that they employed consisted of the French Test of Insight, in which the number of hope-of-success responses made by the individual minus the number of fear-of-failure responses is taken as an index of the net drive to approach achievement goals. Over all of the experimental conditions, high-motive subjects showed greater gains in performance. In the same report, Epps et al. indicated that 219 black male freshmen from a northern black college were not distinguished in their performance at either a digit-symbol task or a scrambled-word task by that measure of achievement motivation. Furthermore, in a separate investigation, Katz, Epps, Atchinson, and Perry (1970) divided their sample of 230 black males from a southern college into two groups according to pretests of achievement motivation: a High group, of subjects high in achievement motive (hope of success minus fear of failure) and low in test anxiety; and a Low group, of subjects low in achievement motive and high in test anxiety. Even with this somewhat more complex trait categorization of overall positive achievement drive, High and Low motivated blacks were found to be indistinguishable in their actual performance in two task situations.

Using the Human Traits Inventory as a measure of academic motivation, Cameron (1968) investigated the determinants of academic success in black female undergraduates at Howard University. The correlation between that measure of motivation and students' grade point averages was found to be non-significant, accounting for less than 4% of the variance in that indicator of achievement outcome in blacks.

Green and Farquhar (1965), however, found that the Michigan State M-Scale subtest of need for academic achievement was correlated significantly with grade point average for both white and black eleventh graders. Yet, while Lipoff (1973) reported that n Achievement scores were correlated with performance in a marble-dropping task for both black and white subjects, that relationship was considerably weaker in blacks.

It seems needless to point out that the empirical evidence fails clearly to support the utility of the construct of achievement motivation for blacks. At the same time, whether a simple construct of drive is in general to be expected fully to explain or predict such behavior must be more seriously considered. Atkinson (1964) argued that the direction and strength of behavior in achievement situations is a joint product of the net approach-avoidance disposition of the individual (the simple drive element) and the perceived probability of success, together with the subjective incentive value of the goal. For instance, Atkinson and Raphaelson (1955) investigated the moderating effects of expectancy upon the relationship of need for achievement to actual achievement performance. In this sample of 24 undergraduates (undesignated as to race), half were led to believe that performance of the task was instrumental to the goal of personal achievement accomplishments, and half were led not to expect that instrumental relationship. For subjects who expected to find performance a contributing factor in their achievement outcomes there was a significant relationship between the need for achievement and various behavioral indices of persistent recall of the performance task. For subjects who did not expect their performances to result in achievement outcomes there was no relationship between their apparent level of achievement motivation and task recall. That the relationship of such a trait construct as overall drive disposition should relate only indirectly to behavior is not surprising. The moderating effects of related factors such as expectancies and value-attitudes may be expected to affect significantly the discriminant expression of drive characteristics in overt achievement for blacks. In this regard, several investigators have sought to conceptualize and demonstrate the impact of expectancy and affect trait constructs upon the achievement behavior of black persons.

Perceived Probability of Success

One way of paraphrasing the traditional model of the determinants of achievement striving is to state that such behavior will be a joint function of the desire to succeed, the ability to succeed, and the value of success. In this sense, the construct of expectancy for success may be conceptualized as consisting of the various components of self and situation that an individual subjectively estimates to be the real constraints upon his performance outcomes. Clearly, one such constraint consists of the individual's perception of his own qualities of ability and worth. Persons high in a sense of self-esteem are likely to be those who perceive their chances for success to be quite favorable. Individuals who feel negatively about their endowed qualities, who lack self-esteem and perceive their abilities as limited, would probably be characterized by low subjective estimates of their chances for success in challenging (especially socially competitive) situations.

Drawing upon such an analysis, Clark and Clark (1939; 1947) reasoned that negative self-concept underlay the failure of blacks successfully to exert and maintain those achievement strivings that contribute to academic and socioeconomic success. They argued that within a social milieu where blacks are the object of cultural devaluation and interpersonal prejudice, a conception of their own racial identity must develop from early socialization, which reflects the negative evaluative tendencies of the white majority. Eventually, this conception is internalized and becomes the basis of the black child's evaluative attitudes toward himself and his own qualities of appearance, behavior, and ability.

A considerable body of research has addressed this general hypothesis, beginning with the empirical work of Clark and Clark. In a 1939 study of self-identification in black nursery school children, these authors reported finding that only 51% of their sample of 150 children correctly chose the line-drawing of a black boy as being most like themselves (or their brothers, in the case of females). Forty-four percent of the children indicated that the drawing of the white boy was most like themselves, representing to Clark and Clark a clear tendency to reject those qualities that were their own and to prefer those that they had learned socially to value. Further evidence for negative self-concept among blacks was offered in a later investigation in which Clark and Clark (1947) reported an overwhelming pattern of evaluative preference ("which one is better?", "which one is me?", and so on) for white dolls as opposed to black dolls. Several other investigators have offered similar evidence together with similar conclusions.

Self-concept and black achievement. The manner in which self-conceptions in blacks relate systematically to achievement behaviors and outcomes, however, is empirically unclear. Not only would such a relationship need to be borne out in the concurrence of low self-esteem and low-achievement relative to whites (see Banks, McQuater, & Ross, 1979), but if the construct is to be useful in explaining achievement behavior, it should also distinguish high achieving from low achieving blacks.

The evidence in support of self-concept as a distinguishing characteristic across high-achieving whites and low-achieving blacks is equivocal. Wylie (1963) compared the evaluative self-ratings of black and white seventh- to ninth-grade students with regard to the ability to perform college level academic work. He found that when the socioeconomic status of his subjects was equated across the samples, no race differences were obtained on this measure of self-concept of ability. Similarly, Wylie and Hutchins (1967) controlled for socioeconomic status across their samples of seventh- to twelfth-grade black and white students, and found these groups undifferentiated in their estimates of their present level of ability relative to peers; blacks tended to rate their ability to do college-level work significantly higher than whites did.

Green and Farquhar (1965) did not control the variable of SES in their comparative study of black and white eleventh-grade students. They compared the samples on both grade point average (as a measure of achievement) and on the Michigan State M Scale self-concept measure. In that investigation, blacks were found to be poorer achievers than whites, and correspondingly to have lower academic self-concepts than whites. Caplin (1969) also compared black and white students and found blacks lower in self-concept and lower in their scores on the Iowa Skills Test. However, Hunt and Hardt (1969) investigated the changes in self-concept and academic achievement (including grade point average) associated with an Upward Bound Program for both black and white high school students, and obtained quite different results. A pre-post shift upward in the positive self-concepts of whites was associated with an increase in academic achievement, whereas nearly identical self-concept improvements were unrelated to academic success in blacks.

One investigation (Krupczak, 1973) of black, white, and Spanish sixth-graders yielded the finding that for all subjects the self-concept of ability (as measured by the Brookover Scale) was significantly correlated with the subjects' grade point averages. High-achievers generally showed higher self-concepts than low-achievers. But in another study, Guggenheim (1969) found that more white sixth-grade students with low self-concepts often failed to achieve self-set goals on an experimental task than did white students with high self-concepts, and that the success of blacks in achieving their performance goals was independent of the level of their self-esteem.

One implication of these findings is that the self-estimations that blacks make of their own capabilities bear less relationship to their achievement than does that variable for white individuals. In fact, other empirical evidence leans even more strongly in the direction of the failure of such a trait construct to account for individual differences among blacks themselves. Wolkon's (1971) comparison of African-identifiers and American-identifiers among black college students yielded differences in academic achievement, unmatched by differences in self-concept. American-identifiers achieved significantly higher grade point averages than did African-identifiers, although those groups were undistinguishable in self-concept. In her study of black college females, Cameron (1968) similarly found that the correlation between academic self-concept and academic grade point averages was nonsignificant in that sample of 58.

At the same time, black high school students have been found to be individually distinguishable in their academic achievement as a function of both self-esteem and self-concept of ability. Epps' (1969) sample of ninth- to twelfth-graders from southern and northern schools had higher GPA's as a function of increasing levels of self-concept. Furthermore, Coffin, Dietz, and Thompson (1971) investigated the academic achievement of black tenth-grade students in Tennessee and found self-concepts to be more favorable among high-achievers than among low-achievers (by GPA).

From these conflicting results, it is difficult to conclude either the clear strength or weakness of the construct of self-conception as a causal antecedent of achievement outcomes. But further evidence is in clear opposition to the hypothesis that self-concept did not distinguish the tendency of black sixth-graders to achieve the performance goals that they set for themselves in an actual experimental task. Conversely, Epstein and Komorita (1971) noted that black fourth- and sixth-grade children in Detroit were unaffected in their self-esteem by the success or failure information they received regarding a task performance.

There are several alternative explanations for the incongruence between achievement outcomes and self-concept among blacks. The most salient relates to a point made earlier in the distinction between outcome indicators of achievement as compared with actual achievement behaviors themselves. Even if blacks held favorable self-conceptions, reflecting their actual traits and abilities, the effective achievement behavior that would follow might not translate directly into conventional measures of academic success. The potential biases associated with the development of standardized testing could systematically misrepresent the actual gains that blacks succeed in making within our educational institutions. It is equally crucial that we note the possible evaluative biases (see e.g., Banks, 1976), intended or unconscious, that may characterize the translations into academic grades made by teachers of the performances of black students. Clearly, one interpretation of the greater congruence between the self-estimations and achievement outcomes of whites as compared with blacks (Guggenheim, 1969) is that while teachers share the evaluative set of white students, they disagree markedly in their evaluation of the abilities of blacks (relative to the self-estimation of blacks). A very significant consequence of such a phenomenon would be the tendency of blacks more often to express the opinion that while they perceive themselves to be as capable as whites, they are significantly less confident of the direct relationship of those abilities to achievement outcomes.

In support of this hypothesis, Paton (1973) and his associates reported that on two of three sets of ratings of ability, blacks expressed self-conceptions equal to those of whites, and on the third their self-ratings were significantly more favorable. However, blacks also expressed significantly more often that they perceived their academic progress to be blocked, and that hard work is not an important determinant of success. Furthermore, high and low achieving blacks have been found to be distinguished more by their perceptions of their teachers than by their evaluative ratings of themselves (Greenberg et al., 1965). Moreover, Krupczak (1973) found that the single best predictor of grade point average for black sixth-graders was the teachers' perceptions of the students, and that white teachers rated blacks lowest in ability among whites, blacks, and Spanish students. (Black teachers, by contrast, rated black students as highest among the three groups in ability.)

Therefore, not only may blacks perceive the relationships between their own abilities and their achievement outcomes to be moderated by the biases of the evaluative and reinforcement systems of our academic institutions, but such perceptions may be veridical. Were these perceptions clearly and repeatedly to be verified in the direct experiences of blacks within achievement situations, even those achievement behaviors that derive from positive self-esteem might be systematically extinguished. The essential question, then, might be how blacks succeed in maintaining self-esteem within situations where external biases seem even to preclude the value of their own positive strivings. In this regard, the perception of external factors as causal in their achievement failures would appear to be both veridical and adaptive for blacks. Although such a phenomenon has been of central concern to theorists of achievement behavior in blacks, its conception has generally been that of personality construct. As such, it has occupied a tentative position with the classical Atkinsonian equation.

Aspirations and Goal Valuation

In 1952 Boyd reported the results of an Oregon-based study of aspirations among black and white youngsters both in connection with an experimental task and with general educational and occupational goals. In that sample of twelve- and thirteen-year-olds, blacks were found to have higher aspirations in connection with both specific and generalized goals than did white cohorts matched for IQ and SES. Jones (1967) reported that in his sample of black and white seventh- to twelfth-graders in a southern city, blacks aspired to more professional and semi-professional and fewer blue-collar occupations than did whites.

As an indicant of affective orientations toward achievement goals, aspirations among various ethnic groups show a pattern of goal valuation which cannot explain the observed differences in achievement outcomes. The evidence cited above represents a nonisolated incidence, for example, of relatively high aspirational orientations among blacks toward achievement in virtually all of those domains that contribute to personal excellence and the quality of life.

For instance, Wylie and Hutchins (1967) queried seventh- to twelfth-grade students from a northern school on several dimensions related to their achievement values and ambitions. Their black and white samples, of comparable IQ and SES level, offered responses similar to those described above: blacks reported a greater desire to attend college than did whites. In contrast, St. John (1966) found that black low SES children expressed lower educational aspirations than did a white low SES sample. That author argued, moreover, that such lower aspirations in blacks may result from a deficiency in the socialization of appropriate values within that population. However, the balance of evidence has argued somewhat more cogently that blacks (and often, too, Hispanic groups) as compared with whites aspire toward higher occupational (Lott & Lott, 1963), educational (Mech, 1972; Phillips, 1972), and social achievement goals (Phillips, 1972). What is more, it is implied by the bulk of empirical evidence that socialization among blacks is directed toward high rather than low value orientations toward achievement goals.

Wylie and Hutchins (1967), for example, asked both black and white children to what extent their parents were encouraging about college attendance. The pattern of responses they obtained led those investigators to describe black parents as "futuristic" and highly aspiring, as compared with white parents, who were reported as having offered less encouragement. Rosen (1956) found that black mothers were undifferentiated from white mothers in their achievement value orientations, though white mothers were found to engage in more "achievement training" of their sons.

However, Garza (1969) later argued that those differences found by Rosen in achievement training were probably caused by black and white mothers' differing perceptions of the opportunities that exist in society for their offspring, and his sample of mothers confirmed that such perceptions were related directly in both groups to achievement training. At the same time, no relationship was found to obtain between the mothers' own achievement values and their achievement training of male offspring in particular. Furthermore, certain research findings have suggested that the relationship of achievement attitudes and behaviors in offspring to specific parental behaviors and inputs is highly inconsistent, and largely insignificant anyway (Solomon, Houlihan, Busse, & Parelius, 1971).

The actual evidence, then, suggests that diversity in achievement among blacks and whites cannot be attributed to differences in valuation of the goal. In fact, one paradox that presents itself within the data pertains to what Guggenheim (1969) has called "'aspirational perseverance' in the face of failure in blacks" (p.70). Part of this paradox revolves around the disparities that appear in aspirational hopes and values versus expectancies and estimates for success. Guggenheim has reported that black children, more so than whites, showed discrepancies between their stated expectations and their actual attained level of performance on an experimental task. And while Boyd (1952) found that his black sample of children expressed higher expectancies for success at the experimental task than did white children, Phillips (1972) reported that whites exceeded both blacks and Hispanics in expectations for achievement success in general, and that blacks were most discrepant in their stated aspirational desires versus their expectancies. Similarly, Lott and Lott (1963) reported that aspirations and expectancies for occupational attainment were more discrepant for black than for white male children.

In light of these findings and those reviewed earlier, two points seem clear. First, both the perception of low probabilities of achievement success and the relatively unfavorable expectancies for desired outcomes distinguish blacks from whites in a manner similar to that of the evidence on achievement outcome measures. Second, the internal affective orientations either toward self-features or toward achievement goals cannot explain a relative lack of achievement success among blacks, nor can we explain these patterns of self-conceptions and aspirations in relation to achievement as potentially veridical. They neither conform to the level of success experiences that characterize blacks themselves nor to the level of success experiences enjoyed by a comparative population for which outcomes conform both to self-concepts and expectations.

That is, the apparent over-aspirations and expressions of self-perceived capabilities among blacks diverge both from their own pattern of failure outcomes and from the level of achievement success characteristic of whites.

This configuration of empirical paradoxes suggests two possible analyses of the dynamics that shape the achievement motivation of blacks.

One level of analysis would suggest that the dynamic processes of work reside within the psyche of such individuals and operate primarily both to resolve an internal conflict between the acknowledgement of achievement values in the self and in society and to admit the personal inability to exert the drive by which they would be effected. In this regard, high aspirations may represent a reaction formation of affective expressions toward a goal that the lack of motivation or perceived inability makes elusive. Similarly, low expectancies for success represent in part an ego-defensive perception of the real constraints to achievement, and a means for escaping responsibility for poor performance and motivation (see Patterson, 1973, for a broadly based social analysis). Low expectancies, then, reflect a fact ("I do not succeed") and a perception ("I may not succeed") not inconsistent with high aspirations ("I ought to succeed").

Insofar as these dynamic processes operate primarily as a protective strategy for the self-esteem of the individual, we might expect its manifestations not to obtain in connection with expressions about the achievement of others. For example, when children were asked to make projections for the expected success of hypothetical others (e.g., black and white dolls), black five- to seven-year-olds expressed expectations for success on the part of blacks that were equally as favorable as those for success on the part of whites (Kline, 1971).

A further implication of such an analysis is that when low expectancies are expressed in terms of the constraints that opportunities and resources place upon goal attainment for blacks (Goff, 1954; Gurin et al., 1969), they represent a generalized tendency in particular to attribute failure to external causes. Friend and Neale (1972) examined specifically the tendency among black youngsters systematically to assign causal responsibility for the failure of a performance task. In fact, their sample of black children, more so than a comparative group of whites, tended to attribute the causes of their task failures externally, to features outside their control.

However, certain yet further implications of this analysis break down upon closer examination. For example, defensive attributions and expectancies would also imply a degree of nonobjectivity in explanations for, and self-assessments of, achievement success as well as failure. Purely defensive attitudes should serve most effectively to avoid esteem-loss upon failure and to enhance esteem-accrual upon success. In this regard, distortions of failure assessments could not suffice to maintain esteem without a concurrent tendency to distort the meaning of, and derive esteem from, success as well. However, Friend and Neale (1972) specifically found that while black children were inclined to attribute failure outcomes to external factors more than were white children, they did not attribute success outcomes to personal factors more than did whites. In fact, black children tended slightly less than their white counterparts to self-attribute success, and did so without the resultant increment to felt pride that obtained among whites. Most importantly, black children expressed the conviction that their own abilities and efforts, while appropriately high in concurrence with success, were actually relatively unimportant in determining either that outcome or failure. In congruence with those findings are the results of several other investigations that suggest that black children tend to maintain highly veridical patterns of self-evaluations and self-reward under conditions of experienced success and failure (e.g., Eiszler & Morrison, 1973), and to an even greater extent than do whites (Masters & Peskay, 1972).

It is conceivable, too, that the sample of black children in Kline's (1971) investigation may have had insufficient experience to recognize the limits that external factors place upon the goal attainment of black versus white persons. That acknowledgement, on the other hand, may have been the basis for, or the result of, white childrens' comparatively biased assumptions about the high probability of goal attainment for white dolls and low probability of goal attainment for black dolls in the same investigation. Banks and Rompf (1973) similarly reported a high degree of evaluative bias among white children, aged six to ten, that was consistently expressed in favor of white versus black persons of equal performance, and across varying expressive modalities, a bias peculiarity absent from the reward distributions shown by black youngsters in that study. Such biases, while not arguing conclusively for the existence of expenctancy-confirming constraints for blacks in the larger society, at least suggest the development of potentially constraining attitudes among persons who most often in our society come eventually to control evaluations and rewards for achievement.

That external constraints to achievement success actually do exist for blacks would constitute an assumption around which an alternative model of the dynamic processes might be formulated. The recognition among blacks of the cultural ideals of achievement and the self-determination by which it is attainable (Gurin et al., 1969) may form a back drop against which material obstacles present a picture of insidious constraints to entitled freedom. Moreover, the theory of reactance would offer a framework within which the paradoxical relationship among the several variables described above could be anticipated. Within this social-psychological framework certain key features of the dynamic conflict reside in the relationship of the individual to forces within his social environment. Constraints imposed by the actions of powerful others evoke a drive to restore the freedom of alternatives thereby denied the individual (Brehm, 1966; 1972). One mode of that restoration suggested within the theory has been appealed to by large (and varied) segments of the black population--that is, aggressive (sometimes legal and non-violent, sometimes violent and illegal) recourse against the agent of constraint to remove his presence, or its important manifestations, from the path to desired goals.

In addition, and perhaps less obviously, the theory describes another characteristic response to such constraints: the elevation of attraction toward the blocked goal. For example, Worchel and Brehm (1971) offered subjects a choice of two alternative rewards, one of which was denied subsequently by the insistence of a confederate that it not be chosen. Subjects increased in their attraction toward that denied alternative, as did children in a similar study where attainment of a reward object was threatened (Hammock & Brehm, 1966).

Where the constraints deny access even to tasks and activities (Brehm & Cole, 1966), particularly to those by which important goal objects are attained, the increase in the desire to approach that task is proportional to the severity of the constraint. High aspirations toward achievement, then, may be understood as a means to overcome external constraints by activating the individual toward especial efforts at restoring opportunities (Brehm, 1966) or removing obstacles (Brehm, 1966; and see also Gurin et al., 1969). In this sense the material fact of external constraints to success may relate closely and directly to the affective and motivational orientations adopted by individuals toward achievement, and such adoptions may take a form of active and constructive compensation rather than passive resignation. Low expectations constitute an objective appraisal of the real probabilities of success, determined largely by the limits of opportunity imposed by external forces. High aspirations represent but one of several modes of adaptive responding.

Social Learning and Motivation

Such a conception is not entirely a new one. Gurin, Gurin, Lao, and Beattie (1969) described an investigation in which blacks were found to have adopted highly activistic orientations toward political change in connection with perceptions that elements of the social system comprise the external constraints to achievement success for the "disadvantaged." In a somewhat different vein, more recent research has again raised the question of whether the existence and imposition of potential constraints to successful performance have the counter-productive effect upon esteem and behavior in blacks which has often been assumed inevitable (see Banks, Stitt, Curtin, & McQuater, 1977).

In this regard, certain cognitive orientations toward achievement that are characteristic of differences between blacks and others, for example, can be regarded as elements of an overall strategy of motivation and behavior that functions to maintain achievement strivings across highly diverse populations and in highly variant contextual circumstances. When those contexts are distinguishable in terms of the facilitative elements that surround a given population in the form of institutions, individual others, or reinforcement stimuli, the primary task before students of motivation is to conceptualize the highly adaptive and compensatory strategies by which productive behavior is (perhaps, at all) maintained.

An analysis of the interaction between reinforcing environments and the cognitive dynamics of minority children represents an insight evident in some past formulations. However, earlier approaches to understanding the bases of performance- and behavior-maintenance, under such nonreinforcing circumstances as academic settings often represent, have revolved around the notion of intrinsic motivation as a person-construct. Katz (1967), for example, has described the critical basis of achievement motivation as the ability of persons to sustain effort in the absence of extrinsic rewards. In this regard, persons who fail to measure up to a normative standard of achievement success within a given environment have been described as lacking in the ability to marshall those skills of self-maintenance by which achievement striving is sustained under conditions of less extrinsic reinforcement.

Banks and his associates (1978) have reinterpreted that process as relying upon the acquired ability of stimuli contained within such situations to sustain the performance of certain individuals. What comes to be referred to colloquially as interest, they have argued, is the tendency for certain stimulus-related behavior to be maintained in contexts from which apparent reinforcers are absent. Interest, then, represents the acquired significance of certain stimuli for a given individual, and it is largely the prior reinforcement associations that relate to highly specific classes of stimulus experiences that form the foundation of the interest-value of achievement tasks, achievement goals, and the "intrinsic motivation" by which effort toward them is maintained. Moreover, these investigators have demonstrated the predictable relationship between "intrinsic" motivational orientations and task interests, as well as the ethnic-specificity of those task orientations. Even in some early investigations where the effects of task-interest have been studied, the pattern of results tends to support this general notion (Williams & Stack, 1972; Lefcourt & Ladwig, 1965).

Williams and Stack (1972) presented black college students with the task of preparing a persuasive statement to be delivered to another subject in the study on one of two topics: "The contributions made by black individuals to society" or "The role of the U.S. Vice-President in national and foreign affairs." The former task was conceived as having high interest-value, while the latter was conceived of as low in interest-value for the subject population. Consistent with the hypotheses, subjects spent more time reading and seeking information from available sources in preparation for the high-interest task than in preparation for the low-interest task.

In a study of task persistence, Lefcourt and Ladwig (1965) engaged black prison inmates in a "match game" with a white competitor (a confederate of the experimenters). The subjects were led to believe either that skill at the task was related to an activity of high or of low interest to them or that they could play as many games as they wished. In all instances, the white competitor won all the games. Under these conditions of consistent failure, subjects who believed that the task related to high interest skills persisted longer than did subjects whose interest in skill-relevant activities was low.

More recently, Banks, McQuater, and Hubbard (1977) undertook an examination of the relationship of task-interest to effort orientations in black and white adolescents. Using the cognitive paradigm employed by Weiner and Kulka (1970) and Weiner and Peter (1973), they asked sixteen- to eighteen-year-old high school students to make achievement judgments in response to reports about the activities of other teenagers. Earlier, that high school population had been pretested for task-liking on a list of various activities. Tasks that were found to be subjectively equivalent as high or low in interest value had been selected for each sex and race subgroup. In this manner, all subjects were given an opportunity to respond with evaluative judgments of achievement in activities that were equal (for blacks and whites) in high interest and in low interest value.

Black adolescents were found to be equally effort-oriented toward high-interest tasks as were white adolescents. Furthermore, effort orientations in achievement judgments were found overall to be greater in high-interest tasks than in low-interest tasks, and effort orientations in low-interest tasks were not different for black and white subjects. This last finding is counter to a hypothesis that blacks are less able than whites to sustain effort orientation in uninteresting and nonreinforcing task contexts.

For our present discussion one interesting implication of this conceptualization concerns the role of aspirations in a nonsupportive (or nonreinforcing) context. As an expression of affect toward an achievement goal, desires and wishes reflect the level of significance which that goal stimulus has for the individual. If the resultant tendency to exert behavior toward a goal is a function of the net (reinforcement) sum of stimulus values associated with the context in which that behavior occurs, one means of off-setting the effects of negative or nonreinforcing elements is by elevating those others that provide positive incentive. In this sense, the socialization of extraordinarily high aspirations among those populations in which achievement success is relatively rare, may have the purpose of providing a precompensating incentive for sustaining efforts against a plethora of extrinsic forces likely to be encountered in the environment. Additionally, an elevation of self-esteem could serve two important purposes: it would provide for sustenance of the perceived importance of self-held aspirational orientations, and it would serve to provide some materially supportive basis (one's own capabilities and skills) for potentially favorable outcomes.

Cast more broadly, we may conceive of the functional roles of these elements in sustaining behavior for any individual, as well as for those particular persons beset by obstacles. From a social-learning point of view, an individual functions largely as a result of the stimulus forces that surround him (Mischel, 1968). However, in conjunction with those objective stimuli, the cognitive mediating processes by which the individual imparts meaning to his reinforcement experiences provide a mechanism for altering the relationships between the external stimulus events themselves and his resultant behavior (Bandura & Walters, 1973). These mechanisms play a critically important role in the adaptation of the individual. In some instances they permit the operation of remote stimulus events upon the individual's behavior as if they were proximal, and thereby facilitate the vicarious acquisition of reward-evoking appropriate behaviors. Likewise, they can serve to buffer the individual against the effects of certain negative stimulus impositions and preserve self-esteem and motivation, often by rendering the impact of proximal stimuli as if they were distal (see Banks, McQuater, & Hubbard, 1977).

The phenomenon of reactance could be recast in terms of a more general theory of reinforcement systems and the social learning processes that govern behaviors within them. In this respect, constraints may constitute negative reinforcement events, and the drive consequences hypothesized by Brehm may derive largely from the interactions between the incentive features that characterize task and goal stimuli and the severity of the constraints. The incentives contained within the achievement setting (or more broadly associated with achievement in general) may determine the severity of potential losses associated with constraints. Moreover, the compensation provided in part by elevated affect toward the goal and toward the self will come into play most clearly where negative reinforcement events bar access to valuable outcomes.

Banks, Stitt, Curtis, and McQuater (1977) conducted a study that lends some support to this notion. Faced with the negative reinforcement of an evaluative agent who was perceived to be obstructively nonobjective, black college students showed quite different responses as a function of the severity of potential loss. Where the goal carried no clear outcome value, affect toward self was sustained at a moderately positive level by its resistance to change. However, where the goal carried valuable outcome consequences (payment), affect toward self was elevated to peculiarly high levels in anticipation of the esteem-losses that might attend compliance with an obstructive and nonobjective system of reinforcement. Subjects in this latter condition had no choice but to work within a system where they would be beset by constraints in order to achieve a desired goal. Although one effect of that experience was to reduce the level of self-perceived ability, such losses (together with the potential losses associated with obstruction from the goal) were handled by a precompensation of "over-esteem."

That valuation of most achievement goals characterizes the initial affective orientations of blacks is suggested by the evidence concerning the early socialization of such values by black parents. Were such values to confront a system characterized by constraints upon the achievement outcomes of those persons, one should hardly expect to find that desirable outcomes accrued to them, or that they should come realistically to expect such outcomes. Particularly where that system is a powerful one, the material reality of achievement for blacks would consist of failure and low expectations. Yet an adaptive and proactive orientation toward achievement and the systems within which it is sought should result in attempts to redouble esteem and aspirations toward success and to remove the constraining obstacles before the goal. This much about our present model seems reasonably to integrate the dominant empirical evidence in the field. However, the model is yet unclear in the various aspects of detail concerning the cognitive mechanisms by which the meaning of important reinforcement events is assessed, the way in which the results of these processes are brought to bear upon the maintenance of achievement behavior, and the highly selective manner in which these processes characterize the adaptation of diverse populations to a relatively standardized institution of achievement and its reinforcement systems.

Tentatively, the diversity among both individuals and groups in the patterns of motivation observed in or across specific contexts may be understood as representing different learning strategies and histories. Tasks, goals, and contexts may vary widely in their immediate and their acquired capacity for evoking and maintaining the kind of apparently reinforcement-free behavior from which we infer motivation. What is more, the highly selective and discriminant cognitive processes by which the stimulus values of a given context are rendered meaningful can be expected to vary widely as a result of, and for the purpose of constructive adaptation to, the characteristic achievement experiences of divergent populations.

One aspect of cultural diversity, therefore, is inevitably to be manifest in varying patterns of motivation. At most levels, the primary basis of the tendency for performance to be maintained in certain tasks is the prior learning that has characterized the individual's experience with the relevant stimuli within his earlier personal/cultural milieu. Obviously, the milieu of the home provides most of the early learning experience through which certain classes of object and activity stimuli acquire special evaluative qualities for the individual. Insofar as the particular experiential artifacts that come to be associated with early reinforcement depend upon the specific value, attitude, and belief structures of the home, individuals can be expected to arrive in any standardized context to find individually varying degrees of motivational significance associated with the immediate stimulus features. To some degree cultural homogeneity across individual and/or family units could insure some standardization both of early experience and motivational proclivities. However, virtually any standardized stimulus context is likely to evoke highly divergent patterns of motivated performance across individuals who comprise a culturally diverse community. Add to this the powerful interactive influences of a reinforcement system that may operate very differently from one context to another and from one population to another (see Banks, 1976), and it is apparent that a homogeneous pattern of motivation and achievement across various subpopulational groups would defy at once both logic and reality.

Bandura and Walters (1963) suggested that the individual mediates the effects of reinforcements by assigning meaning to those events, perhaps through some appraisal of the intentions that they represent (Mischel, 1973). Banks and his associates (1977) have similarly argued that the primary cognitive strategy that mediates the effects of reinforcement events upon the individual derives from the need to distinguish those events that have objective information value for the individual from those that do not. They further surmise that the objective information value of any event consists of the extent to which that event is related to the behavior of the actor. In this regard, the important features of any reinforcement context are the events upon which reinforcements are contingent and the apparent events to which they are instrumental. Those reinforcement events that are contingent upon the prior behaviors of the individual provide the greatest degree of evaluative insight into the nature and proficiency of his emitted actions. Furthermore, those reinforcement events that are instrumental to some future goal object and its attainment by the acting individual provide the most information concerning the value of future behavioral alternatives.

Banks and his associates found that the cognitive attributional strategies by which individuals make judgments about the information value of reinforcements greatly affect the impact of such events upon esteem and behavior. Black individuals were observed to engage in very little behavioral change in response to reinforcements perceived as neither contingent upon their behavior nor instrumental to their success goals. Likewise, losses in self-esteem did not obtain in connection with negative reinforcement events when they were perceived as contingent upon and instrumental to factors other than the recipient's behaviors and objectives.

Conclusions

The important departure of these analyses from those of Katz and others (see e.g., Dion & Miller, 1973) consists of a nonreliance upon such interperson constructs as anxiety that imply a blame assignable to the dynamic structure of black persons. Neither is there an appeal within the structure of this approach to the debilitating effects of inadequate rearing as an explanation for motivational deficits, an appeal which is not sustained by the empirical evidence.

As Katz pointed out in 1967, little evidence supports the notion that some fundamental drive to achieve distinguishes those populations that achieve from those that do not. Rather, the manner in which the situations where achievement performance is evoked relates to the individual's own acquired patterns of responding is the probable domain for productive inquiry. An analysis that takes even more seriously than that suggested by Katz the predominant role of variables in the situation requires fewer inferences (particularly of hypothetical constructs and dynamic processes) to integrate the resultant effects of rigid institutions upon the highly selective patterns of expectancies, attributions, aspirations, and self-esteem that characterize blacks and others.

In this respect, the general diversity of motivation observed across identifiable cultural groups relates largely to the kinds of socialization experiences by which different tasks and contexts acquire meaning and significance. Furthermore, the same kinds of cognitive processes that mediate that early learning are in turn brought to bear upon the experiences with reinforcement systems and achievement outcomes that variously attend the performances within a common context of persons differing in cultural background. In a sense, what is most striking is the fact that the highly specific patterns of those cognitive strategies likely to be invoked by different persons derive from the highly discriminant manner in which situations and the reinforcement agents who control them relate to different individuals. The task of the individual in every case is to manage the environment of stimuli and reinforcements in order to optimize his responding to those features that actually have relevance to his aims.

From a point of view that most comprehensively integrates the dominant research findings, it appears that the functional constructs which underlie differences in achievement are potentially the same across populations. At the same time, the complexity of the processes that characterize achievement motivation across populations may differ widely. For those whose prior learning makes the relationship between standardized task contexts, performance demands, and outcome criteria consonant, the mediating mechanisms required to sustain behavior and maintain esteem are probably limited and straightforward. As the linkages in those relationships become less direct, and the immediate contextual factors of extrinsic reinforcement and evaluation fail to foresee or adapt to those complexities, the mechanisms (or perhaps only the learning by which they are shaped) by which individuals insure coherence in their experiences and constructive adaptation in their behaviors are likely to become more numerous and complex.

Research in this area needs at last to turn its attention to the functioning of the reinforcement systems that characterize the salient achievement contexts in our culture. It should be apparent from the discussion here that a belabored search for the intrapersonal trait and dynamic qualities that make sense of the paradoxes of achievement responding in minorities would be (indeed, has been) misguided. However, an analysis of the operation of powerful reinforcement systems might bring coherence to those paradoxical data. This is not to say that a strict return to an inductivist strategy of inquiry is needed to unfold the meaning of institutional diversity across the identifiable subpopulational groups in our society. But it is less explicit here than it may need to be that a clear and systematic understanding of the manner in which each subpopulation perceives and responds to the multiplicity of acquired meanings contained in the stimulus features of situations is an effective starting point from which deductive theory building and hypothesis testing can advance.

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CHAPTER 9

Identity as a Variable

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A sense of identity is basic to both minimal mental health and to the most sophisticated development of individual potential. Collectively, it defines cultures. In exploring what identity is and what it means, this chapter will begin with definitions and scholarly interpretations, then proceed to methods of measurement and formative processes and structures. The final sections will address the functions of identity and its educational applications.

THE EARMARKS OF IDENTITY

To have identity is to be separable, to be distinguishable. It means that one is not only part of a larger whole, but a thing or person in one's own right. Colloquially, to identify means to pick out, to recognize and name. Identification is possible because a person or thing has salient distinctive characteristics that are different from those of others.

At the same time, separateness and singularity are never radical. To be one of a kind is impossible. People in particular are not only part of the human species, but usually belong as well to genders, racial and ethnic groups, religions, nations, communities, organizations, peer groups, and families. And in fact, much of what is distinctive about a person is often distinctive from the point of view of those with other affiliations. Thus, one is defined and characterized not only by characteristics that may be unique or highly personal, but also by the ways in which one resembles others with whom one is affiliated.

Popularly, identity is conceived in terms of defining traits and characteristics--those that one would select in order to characterize a person, and those that represent the person's own deepest involvements. Identity is constituted by those elements with which the individual is, in short, identified, both from the internal perspective of personal investment and from the external perspective of basic character.

This selectivity in the elements constituting identity suggests a pattern, rather than a random collection. The organized quality of identity is particularly stressed by Erik Erikson, the major theorist in this area (1954, 1959a, 1959b, 1950/1963, 1964, 1965, 1968). Erikson even calls the principal form of identity "ego identity," to emphasize the synthetic, organizing function of the ego in creating identity. To Erikson, organization is at the heart of identity, and he considers identity only one of a series of achievements essential to a healthy character. Edith Jacobson (1964) took issue with Erikson over the relatively exclusive role of the ego in identity formation, but implicitly agreed that organization is essential by pointing to the organizational contributions of other psychic structures, particularly the superego.

General Features

Coherence

The principal accomplishment of this organizing activity is coherence. Identity, as a patterned structure, becomes an organizing force in its own right, providing cohesion. Thus, for Erikson (1968), the opposite of the achievement of identity is identity diffusion, which he later relabeled identity confusion in deference to the objections of anthropologists about his appropriation of the term diffusion. Erikson's discussion of the change was illuminating, though; he abandoned the original term reluctantly, because it more clearly suggested "a loss of center and a dispersion," "a split," and "a falling apart within itself." In other words, basic to identity is the notion of related and linked rather than disparate parts.

Other writers' concepts of disturbed identity are similar; for example, Winnicott's (1967) ego-splitting and Guntrip's (1971) notion of the schizoid problem. Guntrip, who described the schizoid state as frequently underlying a host of other psychic ills, said that it is a condition in which an inner core of personality is buried deep inside, masked by an only apparently viable outer self. The resulting experience is that of nonentity and lack of selfhood. Yankelovich and Barrett (1970, p. 128), summarizing Laing's description, were even more explicit. The symptoms include "generalized feelings of unreality; a blurred sense of selfhood precariously differentiated from the rest of the world; a lack of a sense of temporal continuity; a threat to awareness of personal cohesiveness; and a feeling of insubstantiality or the sensation of experiencing oneself as divorced from one's body."

Sameness and Continuity

The notion of identity as organized is related to two characteristics commonly used to define identity, sameness and continuity. Paranjpe (1975) remarked that identity even comes from the Latin word for "same," *idem*. Sameness is measured in a temporal context; it means that essential characteristics are retained from one moment to the next. Thus, it implies continuity. William James, the widely acknowledged father of the behavioral study of identity, described the subjective sense of identity in a manner Erikson (1968, p. 19) summarized as a feeling of "invigorating sameness and continuity."

The notion makes sense: obviously, it would be hard to speak of identifiable character if the outlines fluctuated. Stability, at least relative to an immediate past, is a condition of identifiability and of identity. Though identity is not fixed, and the salience of particular organizing elements may change, past and future are linked. Thus, a characteristic linking past and present selves at one point may recede to secondary importance at another, and still later fade to insignificance--all without disturbing continuity.

Relationship

The other principal element in most definitions of identity underlines its social content and functions. Identity defines a person, not just in his or her own right, but in relation to society.

Linking the social aspect of identity with continuity and sameness, William James (1890) declared that the "feeling of being the same is the consciousness of standing always in relation to the same world." He explained that a continually similar "emotional loading" of possessions and environment led to "functional constancy."

James stressed sameness in what the world means to the person, whereas Erikson emphasized the complement: sameness in what the person means to the social world. Belonging or membership is an important support for such shared meanings. Accordingly, Erikson linked identity to "solidarity" with one's culture, though he also described cases in which a strong sense of identity was established by individuals because of sympathy with their cultures.

Paranjpe defined alienation as the opposite of cultural affiliation. But alienation can be partial: estrangement from a particular portion of the social milieu rather than from all human ties. Isolation, the condition depicted by Guntrip as defining the schizoid state, is more comprehensive. It marks a person who, unable to form relationships, belongs nowhere. Thus, while identity is a more difficult achievement for the alienated person, it is an impossible one for the isolate. Some real social ties are essential.

The schizoid state, as portrayed by Guntrip, illustrates the links between coherence, continuity, and relationship. The initial event is a self-protective withdrawal of the inner core of the person from an overly threatening or frustrating world. However masked, this basic retreat continues to cripple the capacity for genuine relatedness. At the same time, it leads to the formation of an artificial, "superficially organized" self split off from the true core: hence a lack of personal coherence. In such a state, with neither strong ties to the world nor cohesive internal organization, there is little foundation for the development of sameness and continuity. Identity is basically unstable and precarious.

Identity problems, in the related forms of diffusion and isolation, imply dissolution of ties--both to the past and to others. Conversely, in all of its aspects, healthy identity implies integration. First, there is integration of the person one was with the person one is and is becoming. Second, as Paranjpe pointed out, identity links a person with other persons, and one's own personality system with other such systems.

Basic and Qualitative Identity

The concept of identity as an organized structure that persists in a similar form over time, and that both reflects and reinforces social relatedness, pervades most writing on the subject. Beyond these shared concepts, scholars of the subject begin to diverge. The initial divergence represents less a difference in interpretation than in focus; identity has been viewed in two senses, which can be regarded as general and specific or, more descriptively, as basic and qualitative.

Basic. When psychoanalysts focus on healthy or sound vs. disintegrated identity states, they are dealing with signs of basic identity. Basic identity refers to existence as a coherent person--to selfhood, and its maintenance. Erikson (1954) called it "personal" rather than "ego" identity, and declared that it is concerned with the "fact of existence."

Basic identity is probably easier to grasp in its subjective manifestations. It leads, for example, to what De Levita (1965) called "I am I" experiencing, a nonreflective state in which existence is taken for granted, or in which the sense of existence leads to feelings that all is well and to a sense of liberation. Erikson described the conscious side as one's own recognition of "selfsameness and continuity" along with one's assurance that others recognize the same state.

Qualitative. In common usage, identity means more than just maintenance of personhood and the ensuing feelings. It also refers to outstanding qualities, and to how a person defines himself or herself. In other words, the term has qualitative connotations--the ones denoted here by the term "qualitative identity."

Erikson's stance on qualitative identity is ambiguous. As Jacobson has pointed out, the difference between his concepts of personal and ego identity is hard to grasp. If there is a difference, it is in his emphasis on qualitative aspects in "ego identity." Still, Erikson objected to the concept of traits as overly static; hence he seemed to hedge about whether or not ego identity really refers to content.

Whether or not Erikson presents a developed notion of qualitative identity, content is an important aspect of identity. Achieving distinctive character is not all that matters; the particulars are crucial.

Links

Basic and qualitative identity represent simply a general and a more specific perspective on the same subject. Still, their relationship bears discussion.

First, the tendency to emphasize one or the other is rooted in separate philosophical traditions. Concern with basic identity--identity as fundamental existence--is related to a continental European tradition led by Leibniz, which holds "that identity precedes all existence." Attention to qualitative identity is associated instead with the contrasting Anglo-Saxon philosophical tradition represented by Locke and Hume. This school of thought emphasizes components, picturing identity as "an achievement of psychic functioning," arising from the "unique organization of composite parts" (De Levita, pp. 55 & 107). Accordingly, it leads to an interest in the characteristics that make up a person's specific identity, rather than to a concern with whether or not identity has been established at all.

De Levita pointed out that Erikson, like his original predecessor on the subject of psychological identity, William James, did not choose between the two views, but embraced both. Still, Erikson never tied his discussion of the epigenetic origins of identity to the relations between the two.

Guntrip was more explicit, and he provided us with an eloquent image of the links between basic and qualitative identity. Taken literally, Guntrip discussed only basic identity, locating its genesis in the early infant stage that Erikson associated with basic trust. However, Guntrip emphasized that there is no sense of personal reality without the meaning that flows from a matrix of relationships. He implied that qualitative identity is defined by a structure of relations to the world, and that it both presupposes and fortifies basic identity. Dynamically linked, the two grow up together at every stage. Thus, the same relations that underpin the very sense of being also define its quality.

SCHOLARLY TRADITIONS

Identity refers to personal continuity and ties with the world. It includes both the fact of personal existence, reflected in feelings of continuity and reality, and the distinguishing qualities of a person's existence in the world, reflected in self-characterizations and the perceptions of others.

In writing about identity, scholars have chosen to emphasize one or the other of these aspects on the grounds of other predilections. Two of the most prominent are orientations to individuals vs. groups, and to subjective vs. objective interpretations of reality. These orientations, in turn, frequently stem from professional or philosophical references. Some have already been alluded to briefly. Now, they will be explored and augmented.

The Individual Versus the Group

De Levita felt that psychoanalysts and social psychologists viewed identity differently from sociologists, because professionally they were looking at different material. The difference, although De Levita didn't characterize it that way, stems at least partly from a focus on individuals vs. groups. The ramifications include foci on personal continuity or social connection as the crucial defining characteristic of identity, concern with identity for its individual or its social consequences, and a tendency to locate the source of identity problems in individual history or in social forces.

The Individual

Separateness and distinctiveness. Jacobson (1964) spoke of identity as epitomizing what is "separate and distinct" about a person.

> Whereas all these single specific aspects (of the self) will have corresponding psychic representations, a concept of their sum total will simultaneously develop: i.e., an awareness of the self as a differentiated but

> organized entity which "is separate and distinct from one's environment" (Kramer, 1955, p. 47), an entity which has continuity and direction, and to quote Lichtenstein (1961), has "the capacity to remain the same in the midst of change" (p. 193). This awareness will find an emotional expression in the experience of personal identity (self feelings) (p. 23).

The emphasis fits the task. In the psychoanalytic study of people and their emotional history, distinctive separate individuals are, after all, the starting point. Relationships, in this context, matter not for their own sake, but for their contributions to individual development. Even Guntrip, who was deeply impressed with the crucial role of social relations, retained this point of view; he was passionate on the subject because of its impact on individual well-being. Thus for the analyst, the individual person, no matter how intimately linked to his surroundings, remains more real, more salient, than his environment. The person is figure; the rest, ground.

The concern with individual welfare: From pathology to development. Within this framework, the subject of identity itself takes on interest only when it emerges as a factor in individual welfare. The link can be either positive or negative. In psychoanalysis, which is concerned with psychic dysfunction, identity first attracted attention when it was seen as a factor in illness. Both the original interest and much of the current attention in psychiatric circles focus on borderline and psychotic illness, in which identity is lost or at constant risk. Thus Erikson traced psychiatric interest in identity to World War II cases of identity diffusion, while De Levita associated the beginnings with cases of amnesia observed on or about 1935 (Abeles & Schilder, 1955). Jacobson mentioned Victor Tausk's work on schizophrenia in Germany as early as 1919, but attributed the major growth of interest to an increasing number of borderline and psychotic patients, the foundations of whose identity had dissolved.

Similarly, much of the modern interest in identity is to be found among European existential analysts who treat psychotics more regularly than many of their American counterparts. Among their patients, the desire to achieve gratification often gives way to a more minimal aim: the struggle to preserve a sense of self at any cost. The cost is often isolation, since relationships can threaten to destroy a fragile person either by engulfing him or her, or by filling his or her "emptiness" with the more powerful personalities of others. Laing described the plight of these people as a "state of ontological insecurity" (Yankelovich & Barrett, p. 128).

Not all of those who perceive identity as important to psychic illness stress psychosis alone. Guntrip interpreted the impact of identity more broadly. He declared that "The problem of having an unquestioned possession or else a lack of a sense of personal reality and selfhood, the identity problem, is the biggest single issue that can be raised about human existence" (p. 119). He considered solid identity crucial because its opposite, the "schizoid" state, is not simply another discrete illness, but "a psychopathological trend to be found mixed up with all sorts of other trends," and as such "the pointer to the taproot of all other conditions" (p. 153).

Guntrip is also part of a newer psychoanalytic interest, which associated identity not only with the defense of individual welfare, but with its enhancement. This is the positive link: a concern with optimal development, not just pathology. In Guntrip's view, the real aim of psychoanalysis is to enhance the quality of personal life, not just to eradicate trouble and help people to function. His perspective is captured in a quote that he took from Winnicott (1967): "What is life about? You may cure your patient and not know what it is that makes him or her go on living. . . . Absence of psychosomatic illness may be health but it is not life" (p. 122). He added that psychoanalytic therapy "is in the end concerned with 'what life is about' rather than with simply health" (p. 124).

Guntrip represents the full development of a trend that began with ego psychology itself. Ego functions, like perceiving, thinking, and movement, are ways of getting in touch with reality and the environment. As such, they are not inherently involved with illness; they are simply a part of living. When psychoanalytic attention shifted to the ego, and away from Eros and Thanatos, the sex and death drives that Freud depicted not only as basic instincts but also as the forces behind all psychic life, it necessarily shifted from the potentially troublesome to the elements in the person that are innately neutral or positive in relation to mental health. Hartmann (1939/1958), a pioneer in the ego psychology movement, recognized this by pointing out that both innate functions, like cognition and styles of conducting relationships, may be autonomous, meaning free of conflict. The former are free initially, the latter may grow to be independent of conflictual origins. It is no accident that Hartmann (1964), in developing these concepts, also argued for a psychoanalysis which, in its direct concern with healthy development as well as illness, would become a general psychology, and not just a specialized approach to pathology.

While Guntrip criticized Hartmann for hewing too closely to a static, mechanistic notion of psychic life, as outlined by Freud, Hartmann was the harbinger of a movement within psychoanalysis toward concern with development and normal health, from which Guntrip profited. Erikson is part of the same trend. In Erikson's broad writings on the ramifications of identity development in adult life, and in his concern with historical and cultural aspects of identity, he has clearly gone beyond a conception of identity tied solely to individual breakdown.

Definitional shifts. As psychoanalytic concerns have broadened, the broad concepts used to define identity have evolved. Where the psychoanalytic accent in definitions of identity typically used to fall on continuity rather than relations, and on basic rather than qualitative identity, in Erikson the accent shifted. He was more interested in ego identity than in personal or basic identity, and he brought the social matrix of identity development to the fore more sharply than did any previous writer. While retaining and probably even sharpening the focus on continuity, he thereby gave social relations an equal importance.

At least some of the reasons seem clear enough. Continuity is crucial to the avoidance of identity breakdown, and thus to the achievement of basic identity. Accordingly, continuity is stressed by analysts who focus on pathology, particularly psychotic illness. But when interest focuses on other functions of identity, like articulation of one's place in the world, or of one's purposes and values, continuity fails to describe the crucial aspects of identity. Qualitative concepts become necessary.

Guntrip moved farther along this continuum than Erikson. Erikson emphasized the role of social forces in shaping identity but, disdaining the notion of identity "elements" as too static, avoided defining the nature of the qualities that comprise identity. The closest he came was in speaking of consistent "organizing principles" in the ego, a definition still closely tied to continuity. Guntrip, however, insisted that relations define the quality and the meaning of existence. And, instead of stressing qualitative over basic identity, he described the two as inseparable. Meaningful existence, in his view, was the only solid guarantee of any sense of existence, and thus the only ground for identity. Without meaning, survival would feel empty, unreal, and inevitably unworthwhile. By thus linking the two concepts, Guntrip may have established the fundamental significance of qualitative identity even more soundly than Erikson.

Explanations: Personal phenomena and individual histories. Psychoanalysts, individually oriented par excellence in their approach to human behavior, tend to locate explanations for psychic and behavioral phenomena in individuals, rather than in the social context. That is why the psychoanalytic method looks to individual histories. The emphasis on continuity reflects this tendency. Continuity refers to the links between an individual's current and past states. Social events enter the picture, even in socially oriented analysts like Erikson, as they are processed by the individual and become part of his or her experience. Thus, when De Levita defined the division between psychoanalysts and social psychologists on the one hand, and sociologists on the other, he saw the critical issue as emphasis on the experiencing of continuity vs. the place in the community. The first perspective locates the crux of identity inside the individual psyche; the second, in the social order.

Sociologists do acknowledge continuity as a principle in identity. But in focusing on social behavior and socializing forces rather than psychic events, they tend to curtail the importance of continuity by drastically shortening the time frame within which it is viewed. In accord with an interest in successive episodes of interaction rather than successive phases in a person's life, they seek "trans-situational" continuity rather than continuity throughout an individual's development. The effect is to downgrade the importance of lasting tendencies within the individual.

Summary. The prominence of the continuity theme in psychoanalytic definitions of identity reflects an orientation to individuals in two ways. First, there is the tendency to become interested in a subject because of its impact on individual welfare, which initially translated to an interest in the determinants of pathology. In this context, breakdown in continuity, as the principal symptom in identity loss, shaped definitions of the character of identity. The same focus on identity loss caused identity to be defined primarily as basic identity--subjectively, the sense of existence. Second, emphasis on continuity reflects the predilection to seek explanations of psychic phenomena and behavior inside the person, and thus, in his or her history. Sociologists, operating from a set of concerns and perspectives that give prominence to group phenomena, have interpreted identity differently. Meanwhile, transitional figures like Erikson and Guntrip--analysts impressed with social forces but retaining their roots in a science of the individual--continue to mediate the two orientations.

Social Ties and the Group

Connectedness. Sociologists present the clearest contrast to psychoanalysts in writings on identity. But they are not alone in depicting identity as the embodiment of a person's connection to his society, as well as of his separate status. This is the second major theme in most identity definitions, and it is one shared by sociologically-oriented psychoanalysts, transactionalists, and social psychologists. The ancestor of them all was William James (1890), who initiated not only the theme of continuity, but also the concept that the self is defined at least partly in relation to others, a theme developed most notably by George Mead (1934). The heirs of James and Mead regularly couple the sense of separateness and the sense of relatedness. Erikson (1968) epitomized ego identity as the "actually attained but forever to be revised sense of the Self within social reality" (p. 211). De Levita described identity as "the way a person establishes himself in the world." And Guntrip, who considered identity the central problem of psychoanalysis, defined the field's "own proper business" as "studying the unique individual person growing in the medium of interpersonal relations" (p. 103). He made sense of selfhood dependent not on mere existence, but on a clear, secure feeling of meaningful existence. Meaning, he emphasized again and again, derived exclusively from personal relationships. That is why lack of identity surfaced not only in feelings of unreality and nonentity, but equally in a sense of isolation, of not belonging, and of being unable to establish ties.

While Guntrip and Erikson made social ties indispensable to a sense of selfhood, others went farther and maintained, in effect, that social identity was the only kind. This was the opposite of some psychoanalysts' focus on individuality. De Levita, for example, quoted approvingly from the World Federation of Mental Health Booklet:

> [T]he identity of an individual is a property which is inalienable from him, but in another sense, an individual's identity is only needed, and it might be argued, only possible when he is a member of a group. (p. 7)

He added, "In our definition, one has no identity on an uninhabited island, one has it only in so far as one is 'with others'" (p. 7).

Lichtenstein (1961, 1963), railing against what he perceived as the analytic tendency to emphasize separateness, surpassed even De Levita. Unlike Guntrip, who interpreted the psychoanalytic concept of object-relations as a way of expressing self/world closeness, he shared Erikson's view that it reflected too much self/world distance. Criticizing this view as rooted in a Cartesian notion of subject/object contrast, he went to the other extreme. As De Levita (pp. 110-111) put it, Lichtenstein declared the gap invalid. He asserted that individuals stand in symbiotic relationship to the world, akin to infants in relation to their mothers, or even organs to organisms. Rooting himself in phenomenology, and harking back to Husserl's concept of the "two-in-oneness" of subject and world, Lichtenstein maintained that a person cannot experience himself except as an "'organ' serving a function, an instrument." Self-awareness, he elaborated, presents itself in role terms, or what is for someone else--a parent's child, child's parent, etc. Lichtenstein's emphasis on roles, however, is more "radical" than that of the sociological writers on identity; as Jacobson pointed out, he ignored the tensions between person and world--individuals' agressive tendencies to assert themselves, their singularity, and their rights. His notion of symbiosis depended on the mutually adaptive, cooperating behaviors alone.

Definitions: Identity as roles. Lichtenstein, in his efforts to show that identity has no meaning outside of a social context, submerged the individual element more than most, but his definition of identity in terms of roles is typical. De Levita, for example, said that identity is the "cluster of roles" specific to the individual, "the unique combination of roles I call mine" (p. 52). Anselm Strauss (1959) likewise saw identity as the "totality of roles which someone chooses in a situation." Lynd (1958) and Schachtel (1959) defined identity as role behavior. Turner (1978) shared the view, but he and De Levita included a proviso. Not all roles would do, only ones chosen over and over--a logical limit, if identity assumes continuity. Thus, for Turner and De Levita, cherished roles became the persistent elements in identity that account for continuity. Turner called the process in which roles acquire such meaning "role-person merger." De Levita called it "reification."

Turner and De Levita excluded from their definitions of identity roles those that seemed ephemeral and merely casual because they were confined to occasional situations. Some occasional roles have powerful meaning for an individual, however. They remain embedded in a person's perception of himself or herself and perhaps in others' perceptions despite the limited opportunity for repeating role behavior. The singular experience of winning an important award is one example; the experience of performing heroically under stress is another. Given such phenomena, the concept of cherished or valued roles might be more apt than repeated ones for denoting roles that are at the crux of personal definition. Repetition might be considered simply the usual sign of such valuing.

Whatever the limits imposed, to define identity as roles is to define it primarily in terms of social rather than individual phenomena. De Levita made this very clear, by pointing out that role behavior has a variable, personal dimension, and a dimension that remains invariable despite the idiosyncracies of the actor. It is the latter, invariable aspect that constitutes the role itself. Clearly, this represents a contrast with the analytic tendency to locate the essentials of identity in the person. The focus on roles reflects another difference, too: a tendency to focus exclusively on qualitative identity--that is, on elements that define a person both for himself or herself and for others. While many analysts are increasingly interested in qualitative identity, they rarely abandon their interest in basic identity as an essential underpinning.

One problem that arises out of the sociological equation of identity with roles is the relationship between identity and the true character of a person, sometimes viewed as the relationship between identity and self. For De Levita, at least, the self was the more fundamental and internalized of the two constructs, with identity representing merely a public presentation. No such dichotomy existed for other psychoanalysts, for whom identity directly reflected the essential structure of personality. When a person felt disparity between the way he was viewed publicly and the way he really was or felt himself to be, that in Erikson's view was a sign of identity confusion and crisis, a condition typical of adolescence. Thus, the "antithesis between man in his roles and an individual Self which lurks behind it" (Jung, quoted in De Levita, p. 131), did not usually become a problem in analytic interpretations of identity. For sociologists, on the other hand, the dilemma of self/identity relations gave rise to various theories on self/role relations. Turner's concern with exploring institutional vs. impulsive anchorages for the "true" as opposed to the inauthentic self is one example of this concern.

Concerns: Group welfare and impact. Roles are social coinage, part of an individual's transactions with the world. Those who focus on them, and on transactions in general, are often more interested in group phenomena and the fate of groups than they are in individuals per se. Thus, they care about the optimal functioning of groups and consider personal histories as they affect the roles taken in group transactions. They also care about the preservation of groups and how "roles damaging to individuals" can nevertheless serve such ends (De Levita, pp. 138-139). Group-oriented scholars are interested, too, in socialization as an exploration of group process and influence. Insofar as they are concerned with problems, especially identity disturbances, it is often as social phenomena--failures in the socialization of ethnic groups or age cohorts, or problems in national identity. In the reverse of the psychoanalytic concern, individual problems frequently become interesting for their contributions to group malaise.

Explanations: Social forces. Interactional concepts replace intrapsychic concepts both in identification of the problems and in diagnoses of their sources. Thus, Lynd (1958) located the identity problem she described on a shame rather than a guilt axis, because shame occurs only in interaction (De Levita, p. 104). She pinpointed the cause in the failure of society to provide anchors for individual identification. Wheelis (1958) likewise diagnosed identity problems in the breakdown of previous value systems. This represents not just a slighting of the inner psychic life, as both De Levita and Erikson pointed out, but often a deliberate denigrating of more internally conceived motivations. Thus Turner (1978, p. 2), speaking about the dynamics of identity choice rather than identity disturbance, seemed to dismiss efforts to relate traits to roles through the study of role selection and self/role congruence as tainted by the "psychologistic" focus on traits.

As De Levita pointed out, many theorists who focus on interaction (Berne, 1961; Mead, 1934; Moreno, 1962; Sullivan, 1953) do acknowledge the "principle of internalization of interaction patterns." (All of them, of course, are psychologists.) However, he added, since they reject the Freudian libido theory, they can't explain why some interactional contents are internalized, whereas others are not. Whether or not one accepts a classical Freudian perspective, it is true that at least some of these writers fail to explain differences in the material that is internalized. The more sociological their perspective, the less interest they take in the whole issue.

Turner appears to be an exception: he used both interactive and individual principles to explain role/person mergers, and the explicit purpose was to explain which role elements are internalized (see pp. 37-38 below). However, the theory seems weak on the individual side, so the explanation falls short (see p. 38 below).

The need for bridges. Both De Levita and Erikson bemoaned the distance between the individually and the socially oriented interpretations of identity. De Levita called for a method that would bridge the two, so as to "relate the interaction between human beings to unconscious material obtained directly from both parties" (p. 130). He recommended the direct study of group transactions by psychoanalysts, or at least the direct study by analysts of partners to important transactions--a principle that suggests the precepts of family therapy. Erikson (1968) placed similar recommendations in a somewhat broader context. He criticized social psychological concepts like "role ambiguity, role conflict, or role loss," and contributions from "personsology," like "self-conception, self-imagery, self-esteem," and "personal traits" (1968, pp. 16, 23), as social scientific reductionism--overly one-sided and simplistic representations of identity. He also criticized them as static concepts, which did not permit an adequately developmental view of identity. Psychoanalysis, of course, is an explicitly dynamic, historical approach. However, he declared:

> The traditional psychoanalytic method . . . cannot quite grasp identity because it has not developed terms to conceptualize the environment. Certain habits of psychoanalytic theorizing, habits of designating the environment as "outer world" or "object world," cannot take account of the environment as a pervasive actuality. The German ethologists introduced the word Umwelt to denote not merely an environment which surrounds you, but which is also in you. (p. 24)

And finally, like De Levita, Erikson added:

> One methodological precondition, then, for grasping identity would be a psychoanalysis sophisticated enough to include the environment; the other would be a social psychology which is psychoanalytically sophisticated. (p. 24)

Implicitly, Erikson appeared to fault psychoanalysis not only for being insufficiently attuned to environment, but for being insufficiently future-oriented. The future is included along with the past in his notion of dynamic identity development. Thus, he considered the result of focusing on the "interplay between the psychological and the social, the developmental and the historical" to be a "theory of human development" that tries to find out both "wherefrom and whereto" humans develop.

Objective Versus Subjective Concepts of Identity

So far, scholarly traditions have revealed a divergence between orientation to the personal versus the social aspects of identity, and a parallel emphasis on continuity versus group ties. Erikson's remarks highlight, in addition, an orientation to past and future development versus present-centered and thus more static representations of identity.

Both lay thinking and scholarly theory also reveal another distinction: a conception of identity as essentially a person's own thoughts and feelings about him or herself versus identity as a set of fundamental truths about a person that he or she may not fully grasp. Subjective conceptions prevail in ordinary discourse, and I will start with them.

Subjective Conceptions

The strength of the subjective view is apparent in colloquial usage. Though identity can refer to other people's notions about a person, it usually has the connotation of "one's own" identity. Even when two people are talking about a third person, rather than about themselves, if they discuss identity, they usually seem to mean the person's own sense of himself or herself, rather than how they or others would identify that person.

The same theme is frequently sounded in professional writings. Turner (1978) said that identity usually has a subjective connotation. He related it to the concept of "self," and said it is based on "self-feeling." The equation of identity with self-concept is a frequent occurrence, and one bolstered by the tendency of some self-concept theorists to define self-concept as essential, core ideas about the self--a notion that accords with the idea of identity as a pattern of fundamental themes, rather than of all aspects of a person. Snygg and Combs (1948), for example, said self-concept is comprised of central values about the phenomenal self, which in turn consists of a person's self-defined relations to his world. Bertocci's (1945) notion of "ego" is similar.

Erikson, the preeminent theorist on identity, resembles these writers in his emphasis on the subjective aspects of identity. In a passage where he openly acknowledged his varied uses of the term (1968, p. 208), and listed three meanings implicit in his writings, the first meaning he offered is a subjective one: identity as a "conscious sense of individual uniqueness." (The other two meanings are "an unconscious striving for a continuity of experience," which refers to the process of identity formation rather than to identity as a product of development, and "solidarity with a group's ideals," which could be taken either as an objective state or as a reflection of that state in consciousness.

Erikson, however, resisted equating identity with self-concept. To describe identity as self-concept is implicitly to describe it as qualitative rather than basic identity, and in the passage quoted, Erikson emphasized basic identity: "a conscious sense of individual uniqueness," rather than the sense of what it is that makes one unique. Elsewhere, however, Erikson has focused more on the qualitative side of identity: he has been less interested in the awareness of separate, distinctive existence, than in the "ego quality" of that existence. The common theme in these fluctuations seems to be Erikson's abhorrence of reducing identity to a collection of traits, self-perceived or otherwise--a result to which self-concept theory can lead. Accordingly, Erikson declared that the "conscious sense of individual uniqueness" is "in its vaguest sense" like "what has been called the self," and he referred to Mead's (1934) notion of self-concept, Sullivan's (1953) self-system, and Hartmann's (1964) self-representation.

The notion of identity as self-concept, to which Erikson objected, is related to a subjective notion of the self. This theme in the academic literature on the self has helped to mold subjective conceptions of identity, while a contrasting theme has contributed to objective conceptions. Thus just as individual and social views of identity draw on a larger intellectual heritage, so do objective and subjective views. In this case, the relevant tradition is a stream of psychological and sociological writings on the self whose modern ancestor was William James, and whose lineage includes George Herbert Mead (1934), Kimball Young (1940), Gordon Allport (1943, 1946), Gardner Murphy (1947), and Sherif and Cantril (1947).

On the subjective side of the tradition, the self (the "Me") is regarded as an internal phenomenon: the sum of a person's observations of and reactions to his or her own "bodily and mental processes" (Symonds, 1968). Symonds, in elaborating this view, defined self-concept as only a part of the self, in which he included not only perceptions of one's own body, voice, and so on, but also concepts, evaluations (including positive and negative feelings and objects of attachment), and activities in response to such values. In other words, the self in Symonds' view comprised the reflections and responses involved in processing one's own person. Although Symonds' position was a fuller than usual elaboration of the subjective position, it clearly emcompassed the basis from which subjective notions of identity are drawn. The alternative notion of the self, as the whole person who is the object of observation and response, underlies objective concepts of identity.

Objective Conceptions

Edith Jacobson (1964), one of the principal proponents of an objective definition of identity, defined the self as "the whole person of an individual, including his body and body parts as well as his psychic organization and its parts." In her view, Hartmann was right: the self is not the same as the self-representation. There is a distinction to be made. She criticized Erikson for blurring the analogous distinction between identity and the sense of identity.

Jacobson and others who conceived of identity objectively did not equate it with what is recognized, or identified, about a person by the person himself or by others. Identity is actual identity: that which is available to be recognized, and which accounts for the main accomplishments of identity formation--preservation of personal continuity and character, through maintenance of relatedness to the world outside oneself.

Objective concepts of identity assume that self-perceptions are not definitionally the same as, and not necessarily a true reflection of, the characteristics that relate one to the world and that preserve one's continuity. Implicit in this assumption is a notion of reality and how it is best represented. In other words, both this view and the subjective concepts of identity are based, in turn, on concepts of human reality--of what is "really real" about a person, and of realism--how that reality is best captured. The issues, that is, are epistemological. Their resolution determines the possibility for rapprochement between a subject's view of his own identity and what that identity "actually" is.

Reality in the tradition of scientific materialism. Yankelovich and Barrett (1970) have written a powerful critique of traditional Western notions of reality and their modern formulation within the paradigms of scientific materialism. The centerpiece of materialism in general, according to the two authors, is that only matter or that which has the properties of matter is real. Scientific materialism adds that by the use of scientific operations reality can be reduced to psysiochemical components; it consists of material units, driven by equally material forces, in accordance with mechanical laws.

The basic view is that concreteness is essential; reality is the monopoly of object-like, thing-like phenomena. The truth of this characterization of the pervasive view in our culture is captured in our very word for realism: objectivity. "Subjective" often implies "idiosyncratic."

There is another implication here, too. What is real is outside the self. Reality lies in the world external to the subject, the world of objects "out there." Descartes underlined this point, and the consequent inaccessibility of the "real" object world to the subject, by reinforcing an ancient Western tradition of splitting mind from matter.

Scientific materialist notions of objectivity are reflected, according to Yankelovich and Barrett, in the conceptions of human reality, and its proper study is embodied in two very different traditions: classical psychoanalytic thought, insofar as it draws on Freud's "metatheory" rather than his clinical observations of actual patients, and behaviorism in academic psychology. Much of what the two scholars say about behaviorism applies to other social sciences as well. All are within the positivist tradition of Locke and Hume, which reflects Cartesian thinking.

The criticisms that Yankelovich and Barrett made apply, at least in part, to theories of identity that fall within either of these two traditions. Psychoanalytic writings on identity, of course, were developed largely within ego psychology, which is by no means classically Freudian. Hartmann, in particular, established the notion of the ego as an autonomous entity, with roots and purposes of its own, rather than a derivative of the id, serving only to hold instincts in check. But as Yankelovich and Barrett pointed out, no part of psychoanalysis has ever freed itself entirely from Freud's metatheory. Phenomena are always ultimately explained in terms of id, ego, and superego dynamics. Still, it must be remembered that the ego psychological concepts of these structures do not conform to the mechanistic "hydraulic model," which Yankelovich and Barrett castigated as an almost pure example of nineteenth century scientific materialism.

1. Evidence. With these provisos in mind, one can proceed to the implications of the overall critique for neo-Freudian and social scientific concepts of human phenomena, including identity. First, Yankelovich and Barrett discussed the limitations imposed on the nature of evidence, and how that restricts the phenomena that can be apprehended. If it is assumed ahead of time that the important phenomena are concrete, or at least have the characteristics of concrete objects, then the evidence too is most appropriately concrete: "overt behavior, measurable sensations, bodily processes" (p. 255). Such evidence offers the advantage, besides, of allowing the greatest leeway for the application of just the kinds of constructed, man-made measuring devices favored by the tradition,

like the social scientist's "instruments." Even if such concrete, measurable manifestations are not thought of as direct reflections of the phenomena under study, the choice of such data reflects an effort to achieve certainty by appealing to physical occurrences that bear the essential Cartesian badge of concreteness: simple location.

Concern with the nature of evidence is most prevalent in writers who treat identity within an academic social-scientific framework. Turner (1978) illustrated the concern, and its contribution to shaping definitions of identity. Turner's concept of "role-person merger" was partly the product of his desire to bridge self and role theory, but also offered the concept "as a more behavioral complement to the subjective idea of self-conception." Turner, uneasy about the self-report measures on which most self-concept research relies, considered that behavior offers a better chance to escape the merely subjective.

The use of concrete evidence offers another escape from the subjective: the more concrete the data, the more independent it is likely to be of the perceptions and interpretations of the person under study. One can observe what a person does without asking what he or she is doing. Thus, behavior, while emanating from a person, is more external to him or her than responses to questions, since it can be apprehended without his or her participation. (It can, for example, be filmed or videotaped.) And also the observer is at liberty to record the behavior without first having to determine what part of it reflects the subject's "biases." Of course, it could be argued that the observer will miss the essential meaning of the behavior if the actor is not consulted, but from the point of view of "clean" empirical evidence, the subject's version of meaning is only a confounding factor. If meanings are allowed any importance, they are established by an outside interpretation of data.

Finally, concrete evidence offers distance from the subjective because, in being equally and easily accessible to a variety of outside observers, it allows research to shore up the fallibilities of observations by single individuals with the greater certainty of pooled peceptions. Thus, the final truth is again contained in the views of others--many others--and as such it is multiply external to the subject's own view.

2. Explanation. That the human subject is not trusted to offer evidence about the nature of important aspects of himself reflects a fundamental principle in the materialist code. If the underlying reality is material, part of a world of objective things, and if a person, as "subject," cannot be directly in touch with this object world, then his ability to grasp and report what is most essential about himself is limited. We must rely instead on experts trained to apprehend and understand these things.

The same principle is reflected in another aspect of the scientific materialistic tradition, according to Yankelovich and Barrett. That is, the tendency to explain human phenomena in terms of concrete, physically based forces, hidden behind experience, and constituting the underlying reality: "energies of a psychic apparatus, drives, operant conditioning" (p. 255). Here, personal experience cannot be consulted for explanations because the operative forces are not themselves experienced. Ideas about identity are most likely to reflect this aspect of the scientific materialist heritage when identity is conceived wholly or partly in terms of classical Freudian meta-theory, as an aspect of the fate of instinctual forces emanating from the id.

Yankelovich and Barrett maintained that the tendency to explain human beings in terms of hidden realities alien to their experience is a product of the quest for certainty. They might have leveled the same accusation at strictures about evidence. In either case, as they observed, the quest for certainty tends to derail the quest for knowledge, in which the priority should be to let the nature of what is to be known drive the modes of knowing. What they failed to point out is that if one assumes that human reality is basically material, there is no contradiction.

Emerging critique of the scientific materialist perspective. Yankelovich and Barrett disputed the Cartesian premise that the world can be reduced to mind and matter, and that of the two, matter is the more real. They argued that neither mind nor matter define the fundamental quality of human reality, and that there is no mind/matter cleavage. The alternative they presented is defined by a "new consensus" of philosophers, who agree that reality is to be found in the "lived world of concrete experience"--"common everyday prescientific experience." This view is traced (p. 254) through Wittgenstein's focus on present facts, William James's "radical empiricism," Dewey's insistence on common experience, G. E. Moore's "common sense," Husserl's "Lebenswelt," and Heidegger's "being-in-the world."

Guntrip, who also viewed experience as the bedrock, independently arrived at the same perception as Yankelovich and Barrett: when people are reduced to whatever is most concrete about them, the result is absurdly unreal. Guntrip talked about the error of locating the essence of human nature in the "machinery of the personal life," in "mechanism of behavior." He declared that a focus on behavior misses the specifically human. Rooted in biology, it is more appropriate to the study of animals. Yankelovich and Barrett made the same point (p. 215) by quoting Nevitt Sanford. Sanford (1965), describing "the advocates of a particular kind of psychology--a psychology-without-a-person," declared:

> [W]e have produced a whole generation of research psychologists who have never had occasion to look closely at one person, let alone themselves . . . Reading their papers you get a strange sense of the unreality of it all; the authors' conceptions of variables and processes seem a bit off; and then you realize that the authors have never looked at human experience; they went straight from the textbook or journal to the laboratory . . . . Our young psychological researchers do not know what goes on in human beings and their work shows it. (p. 192)

Yankelovich and Barrett considered classically Freudian concepts equally unreal. If the human person cannot be reduced to a set of actions, neither can he or she be summed up as a congeries of energies and forces. This, they said, is an image borrowed from Newtonian physics, and not applicable even to modern understandings of the physical world, let alone to man. They found it a particularly inept explanation of the phenomena of identity (p. 13).

Personal experience, to those who have emphasized it as the central human reality, is defined in terms of meanings. Thus, Guntrip (p. 49) talked about "meaningful personal experience" as the "essential quality of personal life." Yankelovich and Barrett, meanwhile, pleaded for new attention to the analysis of meanings. Contending that psychoanalysis needs a conception of human nature (a metatheory) in order to define illness in relation to health, and to circumscribe its mission in relation to what other disciplines report about the condition of human existence, they asked that Freud's clinical theory be taken as the launching point. Freud's metatheory, they argued, should be discarded, because it is misleading to explain psychic structure formation on the basis of investments of instinctual energies (cathexes) operating according to the pleasure principle. The deductions, they maintained, often fly in the face of empirical observation. In place of this theory of forces, they would focus anew on Freud's theory of meanings, which he used in his clinical work to explain psychic structures in terms of symbolic processes.

Psychic structures, as defined by Yankelovich and Barrett, "include traits of personality, habits, language, perceptual abilities, controls over impulse, values, and enduring human bonds with others" (p. 408). Meanings do not describe how psychic structures come to be. They are not, therefore, a genetic explanatory theory. But through induction, they can explain what the purpose of a psychic structure is in a person's life, thus revealing why it matters to the person in the present, and whence its holding power derives.

One of the main differences between Freudian metatheory and the new proposed metatheory is that Yankelovich and Barrett did not consider explanations about origins more important than the data of recent experience.

While the two authors argued for a new conception of human nature with revised definitions of instinct or nature, and a changed view of its relation to nurture, they did not consider that an explanation of the laws of structure formation, as elaborated in this context, would constitute a more basic type of knowledge. A cardinal principle of their epistemology was that no phenomenon is reducible to any other. Whatever the role of experience or unconscious drives in the formation of a psychic structure may be, adult structures are real in their own right and cannot be grasped by reference only to contributory factors in the past. Part of the reason is that intention and future potential are part of the significance of any phenomenon.

Meanings were also fundamental to Yankelovich and Barrett because they stressed a holistic view of the person. This constitutes an argument against another type of reductionism: reduction of human experience to elements, or symptoms, which then appear to float in a void. Analysis of human phenomena into elements is a Western habit whose origins they traced to the oldest sources of materialism; it is a form of description appropriate to some physical phenomena but not to human experience, which is characterized by the constant emergence of new, synergistic forms of relatedness, and by gestalt-like, pervasive "modes of being." A focus on meanings ties any pattern of behavior, any attitude, any fantasy, into the larger context in which it comes alive for the person.

The arguments against reductionism are finally related to a critical stance that Yankelovich and Barrett repeated over and over: abstraction, while useful for verification and as a guide to selective description, is not a substitute for knowledge gained by observation and insight. Abstraction by definition eliminates some aspects of experience in order to focus on others; it cannot replace modes of knowing whose purpose is to grasp experience. One of the most common fallacies fostered by the Cartesian heritage, therefore, is the fallacy of "misplaced concreteness," or reification: the tendency to assign concrete attributes to abstract concepts and, in the end, to consider them not just real things, but the only real things.

A revised objectivity. Throughout their critique of prevailing metatheory about human nature, Yankelovich and Barrett stressed the links between ontology and epistemology, or in Kant's terms, between constitutive and regulatory principles. Regulatory principles have to do with the way knowledge can be attained. In the domains of both evidence and explanation, Yankelovich and Barrett implicitly pleaded for a distinction between the empirical and the concrete. They wanted to base psychoanalytic theory more firmly in the former, and to free it from reference to the latter.

1. Evidence. If human reality is constituted by constantly emerging forms of relatedness, some of which become pervasive modes, and if the

significance of these ways of resulting is captured in a structure of meanings, then any manifestation that is capable of revealing personal meaning qualifies as evidence. Bodily processes are certainly no longer an appropriate ground; neither are behaviors alone. Behaviors must be included along with other expressions of meaning: attitude, wishes and intentions, and fantasies--including not only dreams but hallucinations. Heidegger in particular elaborated the notion, which was held by the ancient Greeks as well, that discovery of truth occurs as reality is "revealed" in a variety of ways.

Heidegger also attacked the foundations of the materialist prejudice against "subjective" evidence by arguing that consciousness is involved in, and therefore always refers to, the "outside" world; hence, the individual suffers no crippling disability in his or her capacity to grasp the object world. At the same time, Heidegger made the subject/object distinction less crucial for a person's ability to grasp his own reality. If he was not, in fact, reducible to physically-based forces different in quality from his own experience, and inaccessible to it, he was not disabled in reporting about himself.

The emphasis on meaning in and of itself constitutes an attack on the disqualification of the subjective and internal. It is the opposite of the materialist view that evidence, to be "pure," must be as free of and as far removed as possible from personal context. Here, the view is that behaviors and other expressions are unintelligible by themselves; they become significant only within the structures of personal meaning that they reveal.

2. Explanation. If objectivity depends on honing to the facts, then one insurance for it is to be open-minded about what constitutes evidence. That is, certain kinds of evidence must not be excluded because of a priori philosophical beliefs about what is or is not a sign of reality. In particular, it is important to recognize that different kinds of evidence are appropriate to different kinds of phenomena.

The need to stay close to the facts pertains to explanation as well as to evidence. Descriptive explanation, as Yankelovich and Barrett presented it, involves abstraction. One eliminates some of the descriptive detail of experience in order to describe at a different level--that of pattern. This entails selecting some features of experience in order to display their linkage to other features. Objectivity, in this context, depends on avoiding distortion of the original experience.

One source of distortion is the biases and personal limitations of the person who constructs the interpretive patterns. The corrective for this preserves one vestige of the reliance on external perspectives associated with scientific materialism. It is the traditional method of consensus: the addition of other minds to the process. What is necessary is to report the empirical data--all the varied expressions, for example, that reveal a person's meanings--and to allow others to verify the interpretation.

Distortion can come not only from individuals, but from scholarly traditions and the broad cultural contexts in which they develop. Yankelovich and Barrett argued at length that the a priori insistence on abstract explanatory concepts that fit a Cartesian model has derailed the open-minded search for patterns revealed by empirical evidence, and led to deductive rather than inductive theory-building. The concepts they offer as a focus for research--such as structures of meanings, or psychic structues and the laws that govern their development--do not refer either to physical forces or to entities conceived of in physical terms. The authors went to great pains, in fact, to define a list of attributes for psychic structures that would direct research away from characterization in terms of status traits, location, and association by contiguity--all characteristics of physical rather than psychic entities. But whether or not one accepts their particular conceptual guideposts, the larger principle they advanced seems an indisputable criterion for objectivity in the realm of explanation and theory: the effort must always be to keep both concepts and generalizations a function of the phenomena observed--tentative tools, rather than fixed tenets of philosophical faith or cherished intellectual possessions used to arrange evidence.

Self-concept and identity. In restoring the respectability of subjective evidence as fundamental to a valid view of "objective" reality, the critique of Cartesianism and scientific materialism might seem to lead back to an acceptance of self-concept as an adequate basis for an objective view of identity. But the idea that many people are not aware of all that is most important about themselves, and about which quite a few even delude themselves, seems to be common sense. It is a common sense view that has received support from diverse scholars, not all of whom are entirely motivated merely by distrust of evidence that is not in some sense physical. Frenkel-Brunswik (1939), for example, enumerated the possibilities of defensive distortion, and Jacobson (1964) pointed out that the capacity for detached, introspective self-cognition is sharply limited. Other psychoanalysts have stressed the power of the unconscious to hide from a person much of what is fundamental about himself or herself. One does not have to associate the unconscious with a tangible, locatable, instinct-based force to accept the wealth of clinical evidence on this point; Yankelovich and Barrett themselves honored the elaboration of the unconscious life as Freud's most fundamental contribution.

This emphasis is fully compatible with a view of experience as the fundamental reality. It does not hold that the contents of the unconscious, or of the associated preconscious, are different in kind from the contents of awareness. They, too, are experiential, but they represent experience that is not immediately available to be perceived or articulated. Erikson (1964), in fact, considered the concrete experience that constitutes a person's actual world to be largely preconscious and unconscious. He did not, however, draw attention to the full implications of this position for a theory of identity. He recognized that an important part of the process of identity formation--the striving for integration--was often unconscious, but he did not emphasize that the product, the contents of identity, may be partly unconscious as well.

Self-concept usually relies on self-report; as such it depends on conscious awareness. It is therefore at best a partial view of the experiential reality of most people. It will not do as an objective representation of identity because another ingredient of objectivity is completeness: the most objective view of any psychic phenomenon, including identity, is the fullest view of it. The more that is left out, the greater the distortion. This, of course, could be taken as an argument against abstraction, which eliminates concrete detail. But if we can recognize that for purposes of communication, verification, and pattern description, a shorthand is acceptable and necessary, we can acknowledge that what must be included is the full outline of the structure of meanings. Structure abstracted is not the same as the lived experience, and it must be based on a complete view of that experience.

Self-concept is subject to distortion not only through omission and incompleteness, but also through sheer inaccuracy. A person may think of himself or herself as unattractive, for example, even though he or she possesses endowments normally considered appealing. In this case, the self-report _is_ important data about how a person relates to the world--that is, about his or her identity, but not if it be interpreted as a literal fact. What it tells us is not that the person is at a disadvantage in a socially important category, but that he or she tends to put himself at a disadvantage even when other options exist.

The foregoing example illustrates one reason why the notion of self-concept has such a powerful hold as an operational definition of identity. People tend to become, in fact, what they believe they are.[1] After a time, the potential for another relationship is lost, especially when an individual acts so as to elicit responses from others that accord with his or her own belief, thereby confirming it. Social confirmation, as Erikson has emphasized, is an important aspect of identity development.

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[1] At least one writer has treated this as the _only_ process in identity formation, declaring that "identity is arrived at by a secondary process of experientially becoming or accepting the self-concept." (Rubins, personal communication to De Levita, p. 125.)

Still, especially for purposes of application to practices for fostering optimal human development, the distinction between self-concept and a more objective notion of identity is crucial. The essence of identity is continuity and relation, with the latter guaranteeing the former. Basic identity is most centrally the achievement of continuity. Qualitative identity consists in the stable or continuing elements that have meaning for a person as ways of relating to the world--ways that distinguish him or her from, as well as mark his resemblances to, other people. Though we can and must rely on each individual's report of his or her experience in order to discover his or her structure of meaningful ways of relating, we cannot rely on his or her conceptualization of them at any particular moment. The problems of defining qualitative identity, in short, cannot be solved by equating it with self-concept. How the problem can be pursued is a topic that will be examined further in the section on the nature and development of identity. First, however, we will turn to current ways of measuring identity, since these necessarily reflect the current state of the art in definition.

MEASUREMENT

Basic Identity

Most measures of identity that are labeled as such assume that identity is the same as basic identity. That is to say, they are more concerned with the achievement and/or preservation of personal coherence and continuity with the specific elements responsible for the achievement. Basic identity has been assessed in two contexts: the clinical and the educational. The focus in one has been on health vs. pathology; in the other, on level of development.

Clinical Context: Pathology

In the clinic, identity has become the focus of attention as the cause of pathology. As Erikson (1968) has pointed out, there are two focal points for clinical concern: the adult patient who loses a previously achieved sense of identity, and in so doing, perhaps regresses to an earlier adolescent crisis; and the adolescent who is unable to negotiate the identity crisis successfully. Both may be said to suffer from identity diffusion or confusion. Within this perspective, the absence of identity is the object of measurement. The symptoms, described alternatively by Guntrip as the essence of the "schizoid" state, include "deep-seated doubts about the reality and viability of their very 'self,'" plus "varying degrees of depersonalization, unreality, (and) the dread feeling of 'not belonging,' of being fundamentally isolated and out of touch with their world." He described it further as a feeling of being "cut off, apart, different, unable to become involved in any real relationships"--in short, a "devastating experience of inner isolation" (p. 148). Erikson's (1968) descripton of an aggravated case of identity confusion, leading to a borderline state, contained several of the same elements: "a painfully heightened sense of isolation; a disintegration of the sense of inner continuity and sameness; a sense of overall ashamedness; and an inability to derive a sense of accomplishment from any kind of activity" (pp. 168-169). He, like Guntrip, also emphasized that identity confusion leads to disturbances in the capacity for intimacy. Other signs Erikson presented in connection with adolescent case-histories included a disturbance in time perspective often expressed in a slowing up of activity, and either an inability to concentrate on any activity or a consuming, self-destructive preoccupation with a single activity.

The opposite of such pathological states is reflected in the firm possession of a sense of identity, whose reflection Erikson (1968) located in "a sense of psychosocial well-being." "Its most obvious concomitants," he went on to say, "are a feeling of being at home in one's body, a sense of 'knowing where one is going,' and an inner assuredness of anticipated recognition from those who count" (p. 165).

Pathology or health are generally identified in the clinical setting by means of interviews. There are no standardized instruments--only the accumulated knowledge of practitioners about what symptoms to look for, and an accompanying body of practice about appropriate interview technique. Measurement becomes more standardized in other contexts, for other aims.

Educational Context: Development

For purposes of education and other disciplines concerned more with promoting development than curing pathology, identity has been measured in terms of its growth, as marked by formative stages. Thus, Marcia (1964, 1966) used Erikson's theory to plot out four growth stages in adolescence: identity diffusion, a pre-commitment and pre-crisis phase; foreclosure, a period of crisis avoidance through premature commitment, often to parental beliefs; moratorium, the confrontational crisis phase; and identity achievement, through active commitment. Marcia developed a structured instrument to tap status along this identity continuum.

Qualitative Identity

Measurements of qualitative identity have generally been indirect. That is, there has been copious measurement of constructs often taken as proxies for identity, but in the context of instrument development and publication, these techniques have rarely been labeled as measures of identity. The two most prominent examples are self-concept and role. There is, of course, an abundant proliferation of measurement techniques for each, a full review of which is beyond the scope of this chapter. Some areas of self-concept and role tradition, however, have produced measures particularly relevant to identity as defined thus far.

Self-Concept

As Turner (Note 1) pointed out, much of the work on self-concept fails to focus on qualitative or persistent dimensions of the self. One tradition, departing from James's (1890) and Mead's (1934) notion of the "Me" as an object of self-observation, centers on transient, situational self-images rather than elements of continuity in self-conception. The unit of concern is the isolated interaction; the approach is exemplified by symbolic interactionists like Blumer (1966) and by Goffman (1958). A second tradition uses the term "self-concept" frequently, but employs it primarily as a proxy for self-esteem or self-acceptance. The associated self-evaluative measures have been reviewed by Wylie (1968).

Two other traditions do deal with self-concept in a way that ties it to identity. The first, exemplified in the measures developed by Sarbin and Rosenberg (1955) and LaForge and Suczek (1955), characterizes the self qualitatively, using psychological traits. The second seeks social anchorages for the self by tying self-concepts to role theory. A principal exponent of the approach is Manfred Kuhn (1954), who defined the self-concept as internalized role aspects, and who with McPartland (Kuhn & McPartland, 1954), developed the "Twenty Statements Test" to measure the correspondences. Turner, working in the same tradition, has developed the "True-self Method," based on open-ended questions that ask the respondent to identify situations in which he or she felt either his true or his inauthentic self was expressed, and to tell what aspect of his actions or feelings account for this significance. Protocols are classified according to institutional versus impulse anchorages (a criterion designed to test Kuhn's assumption of institutional anchorages), and individual versus interpersonal involvement.

Roles

Those who define roles as the essence of identity are working in a tradition very much like that of the sociological approach to self-concept definitions. It is no accident that Turner, who was explicitly trying to make connections between role theory and self-concept theory, approached the problem from both directions. In the role domain, he used the behavioral concept of "role-person merger" as the complement to his elaboration of self-concept in the cognitive sphere. The counterpart is De Levita's notion of "reifications": the internalized, persistent role elements that individuals seek to express over and over again in different situatons and roles (see p. 12). The major difference between the two constructs is that De Levita's "reification" is more clearly an unhealthy phenomenon; it represents tendencies to repeat patterns inappropriately, regardless of circumstance, and to behave rigidly rather than to respond freely to the dynamics of interpersonal situations. Turner (1978) voiced some of the same notions, however, when he said that people are "best described in terms of the roles that are still played when not called for."

De Levita, as a psychoanalyst, tended to rely primarily on the techniques of clinical interviewing for data collection. Turner has not yet developed an instrument to measure "role-person mergers." His work in this area has been largely theoretical to date; his research has focused on studies of the "True Self."

THE NATURE AND DEVELOPMENT OF IDENTITY

Characterizations of the nature of identity are often related to particular conceptions about how the growth process works. Efforts to define basic or qualitative identity further, or to verify asserted definitions, can therefore profit from attention to the process of identity development.

Basic Identity

To Erikson, the crucial process in identity formation was synthesis: the work of selecting important elements from the past and forging them into a coherent whole. In his view, this work took place primarily in adolescence, particularly late adolescence, during a period that he termed the "psychosocial moratorium," to denote the culture's indulgence of a respite between the status of childhood and the full responsibilities of adulthood. Jacobson (1964) agreed with Erikson that synthesis is important, but disagreed with his view that it begins at adolescence and involves only synthetic forces in the ego. According to Jacobson, the "processes of organization are operative in all structure formations of the psychic apparatus," and produce "a highly individualized but coherent entity which has direction and continuity at any stage of human development" (p. 27).

When synthesizing is considered the major dynamic in the formation of basic identity, the product is viewed as a synthesis. A second conception of basic identity equates it with separate existence. The growth of a sense of separateness is considered the important aspect of identity formation, reflecting a belief in the interplay between self-image and development of actual character (see p. 25).

Development of self-awareness was particularly emphasized by Mahler (1958), who wrote about the "conscious or unconscious realization of being an independent being separate from the mother." Mahler, Greenacre (1958), and Jacobson located this beginning individuation or individualization during the first three years of life. Erikson agreed, although he accorded the development less significance for identity than for ego synthesis. He declared that the oral and anal stages, which should produce both trust and autonomy, are the time when an individual discovers that he or she "is a person." The major dissent from this view is Eissler (1958); he agreed that identity is a function of awareness of a self, but he maintained that the self arises only at adolescence. Thus, like Erikson, he located the critical period for identity formation at the end of childhood, but for different reasons.

The fundamental process in identity formation can also be conceived in a third way: as a dialectic movement between individuation and relatedness, in which the maintenance of balance determines the ability to achieve a firm sense of personal continuity and reality. Although Erikson did not depict the epigenetic crises he outlined in dialectic terms, at least several of them can be regarded as periods when an existing state of relatedness is disturbed by a biological development or social demand that precipitates increased self-definition or self-assertion. The new separateness and definition are precarious, though; to become firmly anchored, they must be accompanied by the reestablishment of social linkages in a new form (Nevas, Note 2).

Winnicott's (1965, 1967) concept of ego-relatedness, as elaborated by Guntrip (1971), captures the experience and reveals what it means to achieve balance between the impulse to separate and the urge to affiliate. Ego-relatedness is presented as the unique product of the earliest stage in an infant's life, when the child discovers an ability to feel separate and enjoy solitude, while taking for granted the mother's presence, and thereby retaining a sense of relatedness. This original sense of separateness, made possible by a simultaneous connection and conviction about its dependability, is in Guntrip's view the guarantor of all subsequent separate identity, which also depends on faith in linkage to a social reality. The concept echoes Erikson's notion that basic trust is the essential gain from the same period, and an indispensable element in later identity development. At a more general level, the concept parallels Erikson's emphasis on the indissoluble links between the individual and the social in identity. Ego-relatedness differs from Erikson's notion of basic identity, however, in juxtaposing the profferment of secure relatedness at moments of separation as the crucial process in identity formation. Again, the resulting concept of identity achievement reflects the way the process is conceived. Ego-relatedness is an eloquent image of identity as a secure balance between separateness and linkage, reflected in a feeling of comfortable at-homeness, rather than in tense ambivalence between two warring claims.

Qualitative Identity

In qualitative identity, the question is how to describe not the achievement of identity, but the kind of person who emerges. In analytic terms, one can ask what elements account for the individual's continuity and coherence.

The Product: Forms of Relatedness

Some of the writings reviewed suggest another rephrasing. How is it possible to describe the meanings that form both the essence and the residue of experience (Yankelovich and Barrett), and those which (Guntrip) are to be found only in relationships? In both cases, the message is that the way people relate to the world determines the quality of their experience, in the form of meanings, and these same relational meanings define each person's identity.

If we can accept this general formulation, the task of conceptualizing qualitative identity becomes a task of defining the forms of meaningful relation. Two constructs are proposed: belonging, or affiliation, and styles of relating.

Belonging/affiliation. People often think of themselves in terms of belonging: to the masculine or feminine sex, to religion, race, ethnic group, nation, city, region, community, family, occupation, political group, club, or clique. The function of such description, to oneself or to others, and the purpose of the feeling that produces it, is to satisfy a need for fitting in, for being part of some recognized social grouping. In a negative sense, it avoids the feeling of isolation.

People differ in their need for this kind of relatedness. The less needy will probably be most able to avoid conformity: to place themselves outside the groupings into which they were born. But even the most obvious loners and rebels define themselves in association with some significant others. The genuine conviction that one is entirely alone is invariably a recipe for despair.

Since belonging is so basic, it is often the only element associated with substantive identity at all. In other words, having identity, in the popular mind, is often reduced to being identified with groups and groupings. There is a similar tendency in scholarly writings, where the social component of identity is often conceived of solely in terms of social belonging and the recognition of personhood that comes from others in whatever constitutes one's society.

This last note underlines the dual function of belonging. In basic identity, it supplies the supportive relatedness that makes relative independence feasible. At the same time, these ties and their outcomes become a part of who one is. At one level, they help a person define himself or herself in terms of membership. At another level, through the identification inherent in such membership, they become the source of some of his or her personal style.

Styles of Relating[2]

Belonging is a relatively passive aspect of relatedness. Styles of relating are more active. The word "style" is used to connote pervasiveness: these are aspects of the self that affect both behavior and attitudes, and that are constant in a variety of contexts, whether one is relating to oneself, to others, to objects, or to places.

One aspect of style depends on the personal vehicle with which one prefers to make contact--mind, senses, body, or emotive powers. Accompanying each such preference is a responsiveness to, and a desire to be actively involved with, corresponding aspects of the world: structure, sensation, movement, or feelings (Nevas, 1977). These vehicles are roughly akin to what Hartmann (1939) described as ego functions marked by primary or innate autonomy from instinctual sources of conflict. One added element here is that in the course of development, preference for the use of one or another such faculty may arise.

Another part of style refers to the manner or mode in which a vehicle is used. Again, there is a match between the form of behavior and the aspects of the world to which one is responsive: a person who prefers to soothe rather than to stimulate tends to focus on elements in the environment that produce continuity with expectation (Nevas, 1977).

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[2] The material in this section is largely drawn from "The Development and Assessment of a Model for the Definition of 'Work Itself' Satisfactions" (Nevas, 1977).

Yankelovich and Barrett described "modes of being" in similar terms--as pervasive styles that affect existence in a variety of ways. They pointed to Erikson's "modes" and "modalities" as examples. Erikson (1950/1963), drawing on Freud, described typical modes of approach, associated with body zones that become the focus for childhood sexuality at successive stages of development. These modes, in turn, generalize into new social modalities, or ways of relating. According to this schema, the emergence of new physical capacities potentiates new social capacities; and if development proceeds undisturbed, the residue includes a basic attitude toward self and others, related to the dominant modality, that supports mutuality in the future. If a stage is problematical, and the zone becomes tinged with conflict, social modalities linked to it can be enlarged and transformed into distorted approaches to the world. These styles, too, are linked to residual attitudes, but attitudes that are the polar opposites of those characterizing healthy development.

One familiar example that Erikson offers is the compulsive personality, whose hostile use of the modes of retention and expulsion in an effort to exercise control stem from conflict during the anal stage. If the developmental phase had gone well, and the individual had derived a sense of inner goodness from his successful effort at control, the attitudinal prize would have been autonomy. In its absence, there is instead a basic doubt about inner worth and an accompanying sense of shame.

The pervasive quality of modes is demonstrated by Shapiro (1965), who showed that ways of behaving toward people are linked to ways of perceiving and thinking. Shapiro's treatment is limited to neurotic styles. Erikson, however, treats modalities as products of healthy as well as dislocated development. Hartmann (1939/1958) added another dimension: there can be "mixed" phenomena, modes which start as neurotic defenses, but which in the course of growth evolve so far away from their conflictual origins that they acquire "secondary" autonomy as ego functions.

Styles of relating are often linked to an individual's important affiliations as well as to the outcomes of developmental stages. Self-definition in terms of or in contrast to ethnic traits, family idiosyncracies, or the conceptions of masculinity or femininity held by one's reference group, are common phenomena. Erikson, in particular, pointed to shared group characteristics as an important aspect of identity. His description is similar to the description of modes: individuals often adopt not just behaviors typical of their group, but related attitudinal themes representing a general orientation to the world.

It is not enough, however, to characterize qualitative identity in terms of the various styles of relating, including vehicles and modes, which define an individual, plus his or her most important affiliations.

Qualitative identity is more than a collection of elements. It is an integrated pattern based on the relative weight of belonging vs. style, the relative importance of different forms of belonging and style, and the way in which all of these elements are linked to each other. Full understanding of these structural aspects, as well as of the elements themselves, depends on an understanding of the processes of identity formation.

Process

Concepts of process. Since basic and qualitative are not really two different kinds of identity, but rather two aspects of the same phenomenon, there is no special set of processes for one as opposed to the other. The developmental stages outlined by Erikson, which reflect a simultaneous growth in both individuation and relatedness, are important for both aspects of identity.

Differences in process description are a matter of focus, and fall within the same overall framework.

1. Ego synthesis. For Erikson, the focus would not change. His emphasis on synthesis is overriding. Although he recognized that a variety of elements contribute to identity, he thought of identity characteristically as their integration into a pattern.

2. Individuation and social comparison. In the sphere of qualitative as well as of basic identity, the complement to synthesis is again individuation. Individuation emphasizes how elements are shaped rather than how they are formed into a pattern. And once again, individuation entails a focus on an earlier phase of development than does Erikson's version, at least, of synthesis. However, the individuation that is important for qualitative identity reflects specific individual characteristics rather than mere separate personhood, and occurs later. Mahler, who was particularly concerned with sexual identity, located the critical period as between three and latency. Most others agreed, including Erikson, who though he considered this period, too, preparatory to the real work of identity formation later on, did say that the beginning of development toward a particular kind of personality began around the end of the third year, in the initiative stage, and accelerated during the oedipal phase.

Again, those who stressed individuation did not focus merely on the fact of emerging capacities and behaviors. They were interested in how awareness and conceptualization of personal characteristics impact on character formation. Body-image was usually presented as the first area of qualitative self-awareness, with other aspects of the self following.

Greenacre, particularly, showed that in differentiating self-characteristics, a child engages in social comparison, noting similarities or differences between himself or herself and others. Erikson (1968, pp. 22-23) added that as a part of this process, the child notes others' perceptions of himself/herself and evaluates them in light of his own perceptions. Erikson also claimed that this process is mostly unconscious, and that it proceeds as long as a person is capable of growth, though it starts when a child has mastered walking and is encouraged[3] by his/her newly upright status to compare himself/herself with adults.

In presenting the idea that social comparison and the differentiation it entails is ideally a lifelong process, Erikson (1968, pp. 22-23) identified two forces that impel the process to unfold. One is external: encounters with a "widening circle" of significant others, from mother to "mankind." The second is internal: a person's "power of mutual affirmation." This has to be the more decisive factor, since it affects the capacity to recognize the presence of others and therefore to register encounters.

3. Identification. The final two conceptions of major processes involved in qualitative identity formation are identification and role socialization. Both are more specific explanations of the origins of particular identity elements than individuation, and are associated with a tendency to characterize the contents of identity as identifications or roles.

The same writers (Mahler, Greenacre, Jacobson) who pointed to the importance of social comparison in early childhood and throughout the years before adolescence also tended to stress identification during the same periods. They considered identification even more crucial; thus Jacobson disputed Erikson's (1959a) statement that "Identity formation . . . begins where the usefulness of identification ends" (p. 113). (Erikson regarded identifications as important, but only in the same way as the products of social comparison--that is, as elements to be synthesized.)

Identification is often linked to the process of comparison. As Erikson pointed out, the child who has begun to compare himself with adults is also shopping for possible roles to imitate. But identification goes beyond comparison, in the sense that it deals with the person not only as he is, but as how he might be. To put it another way, identification involves change. Either you notice a resemblance, and enlarge its meaning by identifying with the person or group who shares it, or you notice a difference, and try to obliterate it by becoming that way yourself.

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[3] Erikson declared that the crisis period in identity formation, described in this passage as an ongoing comparison process, occurs during adolescence. The fact that he usually (e.g., p. 208) described the crisis as one of integrating the fruits of social comparison leads to some ambiguity.

The notion that identification involves change is corroborated by Axelrad and Maury (1951), who defined it as "a modification of the ego in which a person acquires qualities which have first been those of another object or person" (p. 175). They maintained that the process itself is usually unconscious, a point that echoes Erikson's characterization of social comparison. The contents, too, may be conscious or unconscious, and go beyond "overt behavior traits" to include attitudes, general feelings, and even precepts that the person imitated honors in the breach.

In line with the connection to social comparison, Axelrad and Maury emphasized the operation of an idiosyncratic perception of others' traits as the prerequisite to all identification. In doing so, they in effect agreed with Knight's (1940) point that identification is always preceded by projection, since they defined the kind of projection relevant to identification as an active search for perceptual anchorage points that agree with one's own special conceptualizations. This description of the beginning of identification underlines another point they made: that it is simplistic to interpret identification in terms of observable correspondences between traits or people, since the content chosen for assimilation is dependent on personal meanings.

Axelrad and Maury's anatomy of identification is completed by a description of the outcomes, which they placed on a continuum of internalization. The first two steps involve imitation and require the presence of a distinct, concrete model--first in the flesh, later in memory. If the process goes no farther, the individual feels "identified with" the model, but without owning the characteristics that were the object of identification. In the last step, full assimilation of these characteristics occurs; they become part of the self, with the result that they can form the basis for self-directed, autonomous activity. The need to copy a model, and to check one's behavior against the model, disappears.

Axelrad and Maury distinguished identification from learning in two ways, though they acknowledged that it includes what is usually thought of as learning. First, the contents--another's personal characteristics--impact more broadly on the self than do acquired skills. This distinction may depend too heavily on a narrow definition of learning, whereas the second one seems more fundamental: identification involves content taken over from others with whom there is an emotional, though nonsexual, link. As the authors pointed out, within the forms of identification outlined by Freud and explored by others, the emotional tie is sometimes the stimulus for the process, and sometimes the result of it. Similarly, the process sometimes takes place defensively, and sometimes as a part of normal development.

One last, crucial aspect of the process is that it is motivated; thus, a description of dynamics is only part of the picture. While Axelrad and Maury's account of the "needs and affects" that inspire identification owes too much to Freudian energy models for, say, Yankelovich and Barrett's tastes, their emphasis on the developmental and personal variability of motives would probably command consensus. They are in entire accord with Yankelovich and Barrett in stressing that the complexity of forms points to a need for specific accounts, if knowledge of the subject is to grow.

4. Socialization to Roles. A variety of theorists (De Levita, 1965; Strauss, 1959; Turner, 1978) have conceived of identity as persistent, transsituational role behaviors, and of identity formation as socialization to roles--especially the roles that in Turner's language become merged with the person. Turner's is the most thorough-going attempt to explain the process within the framework of role theory, which is the source of the notion. As he made clear, he referred to institutionalized roles; hence, he was describing a process that takes place late in development, and even extends into adulthood. (He mentioned that students are exempted from real-role expectations, a point reminiscent of Erikson's concept of a psychosocial moratorium.) Axelrad and Maury's explanation of identification focused on the steps in the process, leaving for further study the complex process by which targets for identification were selected. Turner's main subject, however, was selection of role elements. He referred briefly to the procedure by which they were merged with the person as a long series of negotiated role allocations.

Turner posited two forces in the process of selection: social pressures and individual motivations, corresponding to "alter" and "ego" in sociological language. He called the former interactive determinants of merger; the latter, individual determinants. For each Turner constructed a three-tiered explanatory hierarchy, beginning with functions, then moving to derivative principles, and finally arriving at derivative propositions. The initial level, in each case, was explicitly derived from functional theory as stated by Dewey and Malinowski. The central notion was utility: an individual will employ a concept of "person," denoting consistent character (identity), about either himself or another when the concept is useful. Explicitly, at the outset, Turner defined useful as useful in interaction, and especially, useful for controlling interaction. In the context of his list of functions, principles, and propositions, it appeared that useful also meant "easy," or conservative of energy and effort, and sometimes (at least in the case of individuals) facilitating gratification. An economic principle seemed to be invoked at times, too: energy conservation and gratification were to be maximized, effort and cost minimized; and gratification was to be made commensurate with "investments" of energy.

Although this image of human motivation is open to challenge, many of the detailed propositions are convincing. (They may be true for reasons other than their connection with the functions and principles Turner presented; i.e., different principles and functions may be involved as well.) The interactive determinants, in particular, add up to an imposing array of social pressures: reasons why others want to believe that an individual is really as he appears in his roles, and in so believing, influence him to shape himself in their image. In effect, what Turner has done is to put teeth into Erikson's assertion that social recognition is a powerful determinant of identity; Turner's propositions spell out the weight of others' expectations. Turner's list of individual determinants is less satisfying. Whether or not control of interaction is the only reason for the social expectations Turner listed, they appear tighter and more unified. The individual determinants seem spottier, less coherent--more a collection than a set. Perhaps the difference lies in the variable importance of a motivational base in the two cases. Motivation summarized as utility and control may leave more obvious gaps in a picture of individual functioning and ego development than it does in an account of the reasons why an individual is regarded by others according to his or her role as revealed in only a few situations.

This limitation aside, Turner's specific propositions are invariably provocative. For example, his specific suggestions about the conditions for individual resistance to social pressure again give point to Erikson's implied admonition, that identity cannot be maintained without at least some social support. Turner's hypothesis that a tendency away from institutional anchorages for identity may be a way of overcoming conflict with personal predilection is also interesting. He would probably be inclined to interpret such a phenomenon less seriously than Erikson and most psychoanalysts, however; in his view, the function of identity, or self-consistency, seems less profound. At times it appears to be no more than a social lubricant--dispensable, depending on the situation.

The Freedom Versus Determinism Issue

The last two versions of the identity formation process--as identification or as role socialization--are frequently criticized for giving too much weight to the role of the social environment. The result, critics like Yankelovich and Barrett said, is to depict a rubber-stamp version of the person; he or she is molded into the shape society prefers, and identity formation is reduced to little more than cloning. People are portrayed as mere imitations of others, or incumbents of existing roles.

As Axelrad and Maury tried to show, an active person will sometimes select some aspects, but not others, of certain people, and will adopt them as more or less permanent, central, and integrated aspects of himself or herself, for highly idiosyncratic reasons. Turner, too, sought to depict the individual as an active agent, with his own internal priorities, who negotiates rather than swallows social expectations about appropriate roles and role behaviors. Still, an impression of overemphasis on social pressures can develop when any one process is presented as the only or the major determinant of identity formation, if that process assigns a prominent influence to social forces. The impression is strengthened if the account of the process is more extensive and/or more convincing on the social than on the individual side of the ledger, as in Turner's case.

The reaction illustrates the heat surrounding the issue of freedom vs. determinism in human development. (Yankelovich and Barrett consider it one of three major recurring issues in psychology.) In the two instances cited, the issue arises as a protest against overemphasis on environmental influence. When Freudian theory is the target, as in much of Yankelovich and Barrett's book, criticism is leveled at overemphasis on internal, physical influences. In short, determinism can be associated with either side of the old nature/nurture debate.

The issue also arises in the context of an equally venerable philosophical debate about whether identity preexists in its own right as a basic given, or arises only as the product of experience. The first side represents the Continental Leibnizian tradition, the second the Anglo-Saxon tradition exemplified by Locke and Hume. Although loyalties to one or the other have often been championed in the name of supporting human freedom, both sides have been so used. A preexisting identity can be seen as the grounds for escape from environmental determinism or as the basis for an inherited straightjacket.

Whatever the context, arguments for freedom logically rely on emphasizing personal control. If the individual is principally defined by elements under his own control, freedom is enhanced. That, of course, is one effect of making experience and meaning centerpieces in the portrait. The effect is not a valid reason for accepting the view, but it is often a part of the appeal.

Unanswered Questions

Identification and role socialization are more specific descriptions of qualitative identity formation than ego synthesis or individuation.

Of the two, identification seems the more fundamental. Its operation begins earlier, and it is probably not only an avenue for the acquisition of affiliations and styles, but a predisposing factor in the choice of roles and role elements. In fact, Erikson seemed to suggest that the major function of roles was to provide socially recognized outlets for the expression of pre-existing personal content, and thereby to confirm and help synthesize existing identity fragments.

But even if role socialization is assigned an independent formative influence alongside identification, the picture seems incomplete. Axelrad and Maury, as well as Yankelovich and Barrett, have called for a more detailed understanding of the complex operations of identification. Even if this is provided, gaps will probably exist. It seems likely that other processes, too, contribute to the formation of essential styles of relating, if not to affiliation as well. Heredity, for example, may well play an important role in the strength of and preference for certain ego functions over others. The processes by which defenses become free of early conflictual roots and are transformed into autonomous modes is also part of the story. Erikson (1968) listed among the identity elements that must be integrated "constitutional givens, idiosyncratic libidinal needs, favored capacities, significant identifications, effective defenses, successful sublimations, and consistent roles" (p. 163). A complete account of the origins of styles of relating and significant affiliations must include at least some aspects of the development of each of these, and their relations to the others. The work is yet to be done.

FUNCTIONS OF IDENTITY

An oft-repeated central function of identity is to define a person and give consistent shape to his or her interactions with the world. The aspects of identity that accomplish this function are clearly related to other forms of individual variation discussed in this collection. Ethnicity and sex, for example, are powerful dimensions of affiliation. Like other forms of affiliation, they tend to shape styles of relating as well. One's desire to align with or distance oneself from a reference group may effect the emergence of assertion, intellectuality, verbosity, orderliness, playfulness, and so on. These and certain other variants of personal style are in turn related to affective response tendencies and cognitive styles. Work on the development of both, in concert with research on the development of identity elements, should tell us more about the connections among them.

When we move from the central functions of identity to some of its derivative functions, a link emerges with another variable in the study: motivation. In part, identity influences motivation indirectly, by way of self-esteem, a by-product of identity development. Self-esteem helps to determine level of aspiration, which in turn contributes to such motivational phenomena as fear of failure.

More directly, identity feeds intrinsic motivation. The basic elements of identity, affiliations and styles of relating, interact to influence the people, causes, and activities that prove attractive and engage one's interest. Interests, in fact, are a clear function of identity. So are the intrinsic work or leisure satisfactions salient for different individuals. Interests and satisfactions are two sides of the same coin: prospective and retrospective aspects of one's favored involvements with the world (Nevas, 1976, 1977).

When identity remains underdeveloped, a person is often unable to become interested in much of what happens around him or her. At the extreme, the result can be withdrawal; short of that, the outcome is an impoverished existence.

Full development of identity is closely tied to the quality of life a person is able to lead. Here again, the character of the affiliations that a person acquires in the course of his or her development can be significant. If the conditions for maintaining those affiliations conflict with innate talents and predilections, one's full potential can be blocked. A sense of place in society may have to be achieved at the cost of suppressing much of what could be part of oneself (Nevas, 1978, 1979). Full identity development, in short, represents an optimal balance between social linkage and personal development. One's initial background and affiliations can facilitate or hinder both subsequent affiliations and the development of one's full capacities.

Identity influences the ability to achieve minimal welfare as well as an optimally satisfying life. An important aspect of identity is the sense of place and secure belonging conferred by affiliations. The absence of security leaves one vulnerable to alienation, and alienation can breed disaffection from common roles like worker, spouse, parent, or citizen. Insecurity and the sense of rejection also sap self-esteem. The effort to recoup can help to draw a person into alienated pursuits and delinquent or criminal roles (Nevas, 1978, 1979).

Identity affects individuals in other ways that simultaneously impact on the social fabric. Belonging, and the ensuing feelings of security, acceptance, and self-esteem, influence tolerance for others, according to Erikson. In this instance, again, society reaps what it sows. In another instance, support for identity leads to a social gain that is not always welcomed as such: by offering security and bolstering self-regard, a group can breed into individuals the strength to resist social pressures. Their security makes it possible for them to become critics, and to take exception to current trends, while remaining physically and emotionally tied to their surroundings. Still another outcome of belonging, one that enriches individual and collective life in equal measure, is that it provides an emotional base for involvements with other people and other causes. Insecurity, on the other hand, tends to produce preoccupation with oneself (Nevas, 1977).

The range of individual and social outcomes linked to identity development suggests the role that identity can play in education. The conclusion will explore these implications.

IMPLICATIONS FOR EDUCATION[4]

In affecting capacity for involvement, the congruence between innate predilections and social affiliations and the character of one's favored involvements, identity influences the development of individual potential. It does so both directly--by encouraging some interests and capacities while inhibiting others, and indirectly--by motivating or inhibiting different kinds of learning.

Educational interventions represent both the encouragement of positive processes already under way and the efforts to overcome inhibitions or to support the fuller development of neglected areas. In the positive vein, schools can start by providing activities diverse enough so that all of a child's strengths and interests can emerge. In order to recognize the strengths that surface in response to such opportunities, educators must be not only alert, but also open-minded and flexible, in conceiving the forms that capacities and interests may take. The additional development of the abilities and interests thus noted depends in turn on imaginative teachers, functioning in flexible schools that permit them to provide the experiences that extend learning. A final factor is institutional memory. Teachers often learn about who a student has been in terms of achievement scores, but they rarely receive clues to his or her potential in a broader sense--the motivations, learning styles, and talents that have defined his or her most successful involvements.

Positive experiences in school tend to foster learning in general, and thus tend to help overcome weaknesses partly by boosting overall self-esteem. Interventions targetted to particular weaknesses are also possible. A child's interests and learning styles, for example, can be used to involve him or her in areas he or she fears or dislikes. Or the child can be enticed into involvement by the desire to be like an alluring role model. Role models may also prove useful for overcoming conflicts between certain school activities and peer or community norms: for example, a tabu against academic prowess as the mark of a sissy.

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[4] Based on Nevas (1978, Note 3)

The example illustrates one way in which affiliations interact with the development of potential. It suggests the possibilities for resistance to school as an alien environment. In short, identification with school and the school community is an important foundation for any learning at all. When past experience, or the hostility of one's closest affiliates to school ties, interfere with such identification, antidotes are called for. Even when students feel some affinity for school, encouragement of closer ties can enhance learning.

Children are more likely to feel part of a school if they play recognized, esteemed roles within the school social structure. One prerequisite is the existence of a wide variety of roles in both classroom and extracurricular activities, to suit differences in childrens' tastes and temperaments. School staffs can also help by identifying and attacking barriers to participation in roles: discrimination, control of access to roles by student cliques, or transportation difficulties that bar some children from after-school activities.

Devising roles to increase participation will require considerable ingenuity to elicit the interest of some children. Students who are already alienated may need special lures to become involved. Other children may need help in overcoming problems that isolate them or limit their circle of friends, thus rendering their social supports fragile. Another area that demands attention is the way existing mind-sets and patterns of interaction may create obstacles to acceptance not within the child, but within those who must receive him. Counter-measures can be crucial. Activities to foster interaction among diverse groups of students can increase peer acceptance, and changes in school norms that idealize passive, silent classroom behavior can remove a source of friction between students and teachers. Activities targetted at student or staff prejudice may also be in order, as well as staff recruitment policies that make positive attitudes toward all students a priority for new teachers.

A final support for student affiliation with school can come from sources outside the school. When volunteers from the community participate in school activities, or when the school extends its learning arena into the community, children come into contact with new, potentially responsive adults. If children associate these sources of warmth and acceptance with the life of the school, they may begin to reciprocate the welcome.

Parents, or course, can provide the most powerful support for engaging children's energies and allegiances. Parent programs that increase parental responsiveness to school activities, or that lead parents to encourage student involvement in school, may do more to strengthen children's ties to school than any other force.

Measures that solidify a child's links to school also tend to increase his or her overall sense of belonging. The security and self-esteem that result provide an important support for social as well as personal development. Security and self-esteem help build a capacity for tolerance and independence, and for an orientation to productive, nonalienated roles. Thus, some of the same devices that help to accomplish educational goals related to individual development also contribute to the social goals of education.

CONCLUSION

The implications of identity for education reflect the theme that has been repeated throughout. Identity represents a balance between the individual and the social: between individuation and social connection, between distinctive, separate personhood and belonging, between independence and its underpinnings in security. Both basic and qualitative identity reflect these elements. The sense of individual existence and continuity depends upon a taken-for-granted rootedness, and the quality of that existence is embodied in characteristic affiliations and ways of relating. Both aspects are expressed in involvement: the capacity for relation, and its preferred forms.

At its broadest, the mission of education is to develop involvement, in both intensity and breadth. In so doing, education makes its most fundamental contribution both to the quality of individual lives and to the fabric of collective life.

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CHAPTER 10

The Educational Relevance of Health and Nutritional Factors

Margaret E. Hertzig

"A sound mind in a sound body." The folk wisdom embodied in this familiar aphorism expresses the hopes and aspirations of all those concerned with the welfare of growing and developing children. A practical expression of this concern is to be found in the long tradition of pediatric and public health attention to the provision of well baby care and school health programs. Common sense suggests that good health and successful progress in school should go hand in hand, whereas physical illness, particularly if unrecognized or untreated, may well predispose to school difficulties and educational failure.

The health of children is the proper and appropriate concern of those physicians whose primary focus is on the prevention and treatment of illness. Is it of educational concern as well? It has been argued that ill health is a significant variable leading to differences in the school performance of individual children. It has been further argued that education, if conducted in ignorance of the physical condition and health status of school children, is disorganizing and doomed to failure (Birch, 1968). But how are the educational consequences of ill health and inadequate nutrition manifested? What conditions may be associated with an increased risk of school failure or underachievement? In which children? Under what circumstances may the negative effects of ill health be either mitigated or exacerbated? How may the educator use this information in facilitating optimal school progress?

A review of the origins of current concern with the educational relevance of health and nutritional factors will place our considerations in perspective. Although it was known that health and nutrition significantly contribute to and are significantly affected by the life circumstances of people (Orr, 1936), attention was most sharply directed toward the impact of these factors on the education of school children

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at the close of the past decade as an outgrowth of concern about the effectiveness of programs of compensatory education (Birch, 1968; Birch & Gussow, 1970). It had long been recognized that significant numbers of children within a population fail to make satisfactory progress in school learning situations. After all, the work of Binet (Binet & Simon, 1905) was in large part stimulated by the desire of parsimonious French educational authorities to insure the early identification of children unlikely to profit from exposure to opportunities for education. By the middle of this, the twentieth century, evidence deriving from studies of large numbers of children living in a variety of social and economic circumstances has demonstrated unequivocally that the more disadvantaged of such children perform less well on standardized tests of intelligence as well as in response to other demands for academic proficiency during the school years (Havighurst & Breese, 1947; Herrick, 1951; Haryou, 1964; Kennedy, Van de Riet, & White, 1963). Moreover, differences in IQ are observable even prior to school entrance (Anastasi & D'Angelo, 1952; Anastasi & deJesus, 1953; Bereiter & Engelman, 1966; Gray & Klaus, 1965; Hertzig, Birch, Thomas, & Mendez, 1968).

In the early 1960's attention began to be directed toward the exploration of certain critical distinctions between economically different groups in an effort both to account for their differential educational achievements and to provide directions for intervention. Socioeconomic differences in the opportunities of children from various segments of society for early social and psychological experience were identified and described. Exposure to a "culture of poverty" (Lewis, 1966a, 1966b) characterized by large family size, marked overcrowding in the home, substandard housing, frequent moves, instability of family organization, and inadequacies in maternal care (Deutch, 1963; Hunt, 1961, 1964; John, 1963) came to be considered to underlie the emergence of observed social class differences in motivation (Gray & Klaus, 1965), language use and organization (Bernstein, 1962, 1964; Deutch, 1965), and attitudes and cognitive styles (Hunt, 1961). It became increasingly clear that differences in the acquisition of what might be considered as tools of learning contributed significantly to the development of a subsequent differential in the ease with which and the extent to which children would be able to profit from common bodies of instruction. When these factors were considered together with the fact that the facilities for, and the quality and quantity of, instruction provided to children from economically deprived segments of society were often below that available to those of the middle-class, both the causes of school failure and appropriate remedies seemed apparent. The rapid development of a profusion of programs subsumed under the general rubric of compensatory education, and designed to address issues in the areas of familial environment and the patterning of preschool experience, motivation, cultural differences in language usage and organization, and features of curriculum followed (Gordon & Wilkerson, 1966).

At the height of these developments in the late 1960's, Birch (1968; Birch & Gussow, 1970) pointed out that an exclusive focus on social and cultural variables relevant to educational achievement might well lead to neglect of biosocial factors that had the potentiality of directly or indirectly influencing the developing child and altering his primary characteristics as a learner. These workers fully recognized the importance of the contribution of social and cultural factors to an understanding of some of the causes of educational failure; they clearly demonstrated that differential exposure to conditions of risk of damage to the central nervous system, as well as to other sources of ill health, parallel the differential distribution of school failure in the population. Children of the poor are born of mothers who

> come to maturity less well grown and at greater biologic risk as reproducers than do their more fortunate sisters. Beginning too young to bear children, such mothers repeat childbearing too often and continue it too long, through pregnancies in which their health care is often poor, their nutrition suboptimal, and their medical care frequently non-existent.
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> A child born of such circumstances is likely to be smaller at birth than his more fortunate contemporaries and is more likely to die at birth or before he reaches his second year of life. . . . infancy is more likely to be punctuated by frequent severe and persistent illnesses. . . . survivors are likely to be more poorly fed and cared for in their homes, overexposed to disease in their communities, and the recipients of little or no medical supervision. The failure of such children in school is not only not a mystery but is virtually foreordained. (Birch & Gussow, 1970, p. 12)

Moreover, in the words of James (1965) "poverty begets poverty, is a cause of poverty and a result of poverty." Not only may a child born and raised in such circumstances be ordained to fail in school, but having done so, his adult life experience may well be characterized by unemployment and underemployment, sickness, apathy, and poverty, perpetuating the cycle into succeeding generations. A serious attack on the problem of school failure therefore requires an attack on the life conditions that characterize poverty wherever it is found. Amelioration will not follow merely from the provision of better prenatal and obstetrical care, improved health services to children, and more adequate nutrition or better schooling, however important these measures may individually be. The problem is an ecological one, and its solution requires the integration of effort on all these fronts (Birch & Gussow, 1970; Tizard, 1974). The implication of this conclusion is somewhat overwhelming because it tends to suggest that unless a meaningful--as opposed to a makeshift--"war on poverty" can be mounted, little can be accomplished. However, as Tizard (1974) has pointed out, each measure helps to break the cycle. It is within this context that the educational relevance of health and nutritional factors require exploration.

What information about the physical health status of children may assist us to better meet their educational needs?

Traditional epidemiology teaches us that the definition of interventive strategies will follow from the identification of those conditions of ill health that are associated with an increased risk of school failure, and from the exploration of possible mechanisms through which this association may have become manifested. While the identification of conditions of risk is obviously an essential first step, statistical associations in and of themselves are of little value to the practitioner faced with the task of designing and implementing educational programs for individual children. It is therefore necessary that our area of concern be expanded to include the definition of the range of possible outcomes associated with exposure to given adverse conditions, as well as the identification of factors influencing expression of this range. The step-by-step consideration of specific illnesses affecting children provides a broad general framework within which available information about the relationship between health factors and educational progress may be organized. However, a fuller understanding of the range of consequences that attach to exposure to particular conditions of ill health is additionally dependent upon both the examination of the role of "extra-illness" characteristics of affected children, and the contribution made by the familial and broader social environments in which such children grow and develop.

This conceptual model is elaborated in subsequent sections. My purpose has been to illustrate a set of general principles that may be applied to the analysis of educational relevance of any condition affecting the health of children. Consequently, the ensuing discussion is selective rather than exhaustive or all-inclusive. Clearly, children differ from one another with respect to their exposure to conditions that place them at increased risk of the development of illness. They differ as well in relation to the illnesses they may have sustained in the past and/or their prior nutritional history. In addition, the members of any group of children also differ from one another with respect to their current health and nutritional status. Any or all of these circumstances may place an individual child at increased risk of educational failure. Although these distinctions are to some extent both artificial and overlapping, they provide a framework within which available information may be organized.

What may be the relationship between educational attainment and the health status of children prior to school entrance?

The assessment of the contribution made by past events to current levels of function is particularly difficult. The greater the elapsed time between exposure to insult and the evaluation of outcome, the more difficult it becomes to clearly establish causal linkages. Intervening events may contribute to either an exacerbation of disability or to an enhancement of function.

These complexities are further specified in the course of the consideration of the following health-related events: prematurity, pre- and postnatal malnutrition, and hospitalization during the first five years of life.

Prematurity and other complications of the birth process are among the factors in the health history of children most strongly associated with later intellectual and educational difficulties (Birch & Gussow, 1970). Pasamanick (Pasamanick & Lillienfeld, 1955; Knobloch & Pasamanick, 1974) has described a continuum of reproductive causality extending from death at one end, through overt neurologic disease such as cerebral palsy and epilepsy, to lesser forms of neurologic impairment that are expressed as school learning difficulties and behavioral disorders at the other end. There is little doubt that the risk of cerebral palsy, not infrequently accompanied by mental retardation, is significantly increased in prematurely born children, particularly if their birth weights are below 1500 gms. (McDonald, 1964).

What about prematurely born children who are without evidence of overt neurologic disease?

Numerous studies have suggested that the risk of mild mental retardation and educational backwardness is increased in such children as well (Abramowicz & Kass, 1966; Benton, 1940; Drillien, 1970; Wiener, 1970). Interpretation of these findings is complicated by the fact that prematurity occurs significantly more frequently in the most disadvantaged segments of society. However, Richardson (1974), utilizing data deriving from the total population of children in the city of Aberdeen in Scotland, demonstrated that the size of the difference in mean IQ between all children in a social class and those with low birthweight and gestational age is larger in the lower social classes than in the upper social classes. Thus children from lower-class families are at greater risk of intellectual and educational impairment as a consequence of low birthweight and shortened gestational age than are children from upper-class families. This difference may reflect a biosocial interaction in which the vulnerability of handicapped children to adverse social circumstances is increased, whereas more supportive and facilitative environments may serve to mitigate the negative consequences of a similar initial insult.

Further support for this view derives from the data of a longitudinal study of 68 middle-class children who weighed between 1000 and 1500 grams at birth. Fifty-three of these children were without evidence of overt neurologic disease when they were followed-up at eight years of age. All of these children had IQ's within the normal range and all were functioning at grade level in both reading and arithmetic.

However, more than one-fourth of these children required special class placement or remedial instruction to achieve and maintain this level of performance. In addition, the requirement for special educational intervention was almost entirely confined to those children who on neurologic examination exhibited nonlocalizing signs[1] of central nervous system dysfunction. However such a requirement was noted in only one-half of the children with so-called "soft" signs. In the others, no special environmental interventions were necessary to insure a smooth developmental progression (Hertzig, Note 1). These findings illustrate a complex set of interrelations. Prematurity increases the risk of functional impairment of the central nervous system. For many children raised in advantageous social circumstances, such impairment does not have negative consequences for intellectual or educational achievement. However, for other children, similarly affected and raised in similar circumstances, additional educational interventions are required to insure satisfactory progress in school.

Nutritional inadequacy is another aspect of the past health history of children that has been associated with deficiencies in later intellectual and educational achievement. In man, the period of rapid brain growth extends from the last trimester of pregnancy through the second year of life (Dobbing & Smart, 1974). The anatomic and physiologic consequences of malnutrition during this brain growth spurt have been well documented in animals and, to a lesser extent, in man. They include an overall reduction in brain size, a differential reduction in cell number, a decrease in the lipid content of the brain, and alterations in enzymatic activity (Dobbing & Smart, 1974; Winick, 1976). However, the functional consequences of malnutrition have been much less readily demonstrated.

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[1] The clinical neurologic examination of children yields two types of findings: localizing and nonlocalizing, or so-called "soft," signs. Localizing findings include those central nervous system abnormalities that reflect damage to a particular area of the brain and include cranial nerve disturbances, lateralized dysfunctions, and the presence of pathological reflexes. Nonlocalizing or "soft" signs are those abnormalities of performance reliably detected in the course of clinical examination, the presence of which cannot be attributed to structural damage to the nervous system. Although different clinicians and investigators have included different items in the assessment of "soft" signs (Rutter, 1977; Adams, Koceis, & Astes, 1974; Hertzig, Bortner, & Birch, 1969), the list commonly includes clearly recognizable disturbances of speech, failure to maintain adequate balance, disturbances in gait, inadequacies of muscle tone, defects in coordination, inability to engage in sequential patterned finger-thumb opposition, graphesthetic and asteregnostic disturbances, and excessive degrees of adventitious motor overflow (choreiform movements).

Nutritional insults can be conveniently divided into those that are sustained prenatally and those that occur after birth. Stein and Susser (1979; Stein, Susser, Saenger, & Marolla, 1975) followed the time-honored epidemiologic tradition of utilizing the experiment in nature created by the Dutch famine of 1944-45 to explore the possible consequences of prenatal malnutrition on later physical and mental development. The famine was caused by the embargo imposed by the Nazis on food entering occupied areas of Holland in the later stages of the Second World War. It lasted for six months, until the Allied Forces broke the blockade. The large cities of Western Holland were primarily affected, while the Southern and Northern portions of the country were subjected to less severe degrees of nutritional deprivation. Contemporary records, which document the immediate consequences of the famine, were examined, and the military records of successive cohorts of 19-year-old Dutch men who had been born in areas differentially affected by the famine were analyzed. No differences between those born in affected and unaffected areas, or between successive birth cohorts, were found in height, mean IQ, or prevalence of mental retardation. The investigators concluded that "poor prenatal nutrition cannot be considered to be a factor in the social distribution of mental competence of surviving adults in industrial societies." (Stein et al., 1975)

Two factors make it difficult to accept this conclusion without reservation. In the first place, it should be noted that although birth rate dropped precipitously during the famine, the mean birth weight of the children born during the period remained high. It ranged from 3110 grams to 3275 grams in successive cohorts, which is little different from that reported for male British singleton births (3000-3500 grams) in the year 1958 (Tizard, 1974). Thus by international standards, the children born in the Dutch famine areas were not malnourished at birth.

Of perhaps greater importance, however, is the limitation imposed by the fact that the available data do not permit the mental competence of individual adults to be related directly to their condition at birth. Survivors have, of necessity, been treated as homogeneous within broad social class and geographic groupings. In the analysis of the outcome data, mental competence has been related to differential exposure to a presumed risk condition and not to the differential response to such exposure on the part of the surviving organism. Such links must be established if the mechanisms that operate in the production of defective outcome are to be fully understood. The critical question in the study of risk conditions is to identify why some children turn out badly and others are spared (Birch, 1974). Just this approach has governed some of the more recent investigations in the area of the effects of postnatal nutritional insult.

Numerous studies have been concerned with the consequences of early severe malnutrition for physical growth and mental development (Champakam, Srikantia, & Gopalan, 1968; Cabak & Najdanvic, 1965; Chase & Martin, 1970; Pollit & Granoff, 1967; Stoch & Smythe, 1963, 1967; Birch, Pieiro, Alcade, Toca, & Cravioto, 1971; Hertzig, Birch, Richardson, & Tizard, 1972). These studies have been reviewed and discussed so often (Frisch, 1971; Klein, Habicht, & Yarbraugh, 1971; Pan American Health Organization, 1972; Tizard, 1974) that, as Warren (1973) has pointed out, the number of reviews may soon exceed that of the empirical studies to be considered. There is, however, fairly general agreement that children who have suffered severe malnutrition in infancy or early childhood do less well at later ages on tasks of learning and intelligence than do control subjects who were not severely malnourished.

The reasons for these differences are less easily determined. In human studies the possibility of selecting appropriate control subjects is severely limited. The inability to obtain adequate control over many of the factors known or postulated to influence the intellectual development of children suggests that it is necessary to examine an episode of severe malnutrition in early childhood within the context of a child's overall life history in order to determine under what circumstances and conditions severe malnutrition in infancy is associated with mental impairment, school failure, or behavioral disturbance later in childhood.

This approach is well illustrated in the reports emanating from the intensive study of 74 boys aged between 6 and 11 years who had been hospitalized for severe infantile malnutrition during the first two years of life in Jamaica, West Indies (Hertzig, Birch, Richardson, & Tizard, 1972; Richardson, Birch, Grabie, & Yoder, 1972; Richardson, Birch, & Hertzig, 1973; Richardson, Birch, & Ragbeer, 1975; Richardson, 1975a, 1975b). Comparisons between the previously malnourished children and control children who attended the same class in school revealed the index children to be on the average shorter in stature, lighter in weight, and to have smaller heads than children in the comparison group. More index children were intellectually and educationally backward. On the average they had fewer friends in school and were more often rated by their teachers as being dull and timid and by their mothers as being docile and unaggressive. Some of these characteristics were shared, although to a much less marked degree, by their male sibs who were in the same age range. In addition, the index boys were found to have derived from backgrounds that were significantly more disadvantaged as measured by an index of home stimulation. In both the index and comparison groups, taller boys were found to have significantly higher IQ's than did shorter boys, and boys deriving from more advantaged backgrounds had higher IQ's than did those who were growing and developing in more disadvantageous circumstances.

However, the effects of malnutrition were not uniformly negative in all children. Richardson (1976b) concluded that

> an acute episode of severe malnutrition in the first two years of life has differing consequences for intellectual impairment, depending on the background history and characteristics of the child's guardian, the economic conditions of the household, and the kinds of social experience the child has had. Further the consequences are influenced by the life history of the child which is reflected in his stature at time of follow-up. Height provides some indication of the child's nutritional history, and possibly something of his overall health, in addition to having a genetic component. If severe malnutrition in infancy occurs in a context of a life history which is generally favorable for intellectual development, the early malnutrition appears to have a negligible effect on intellectual functioning. If early malnutrition occurs in an unfavorable general ecology for intellectual development, the severe episode of malnutrition has a clear relation to later intellectual impairment. (p. 269)

Similar conclusions were drawn in the course of an anterospective study of all of the children born in a rural village in Southwest Mexico (Cravioto & DeLicardie, 1972). In this ecological investigation, children and their families are being studied over time in their social environments. Of 300 children born in this village during 1966, 22 developed severe malnutrition before they were five years old, but only one did so before his first birthday. The pattern of differences between the families of children who became malnourished and those of control children matched with respect to neonatal status is of particular interest. The families of these two groups of children did not differ in structure, economic status, or sociocultural characteristics as measured by personal cleanliness, literacy, or educational level. Nor did they differ with respect to the biologic characteristics of the parents; height, weight, age, number of pregnancies, or size of families.

However, marked differences were found in the characteristics of the microenvironment of the home as assessed by the Caldwell Inventory of Home Stimulation (Caldwell, 1974). Even at six months of age, when only one of the malnourished subjects was beginning to show signs of clinical illness, the control families were providing a home environment characterized by more frequent vocal stimulation and gratification of needs, more positive emotional climate, and greater availability of play materials. One-fourth of the homes of children who later became malnourished were below the level of any of the homes of control children, and nearly one-half had scores on the Caldwell Inventory less than the scores of all but one of the families in the control group. These findings persisted over time, and illustrate that the sociocultural environment of children who subsequently become malnourished is likely to differ markedly from that of other children, even within a social group in which living conditions appear from the outside to be very homogeneous.

Some interesting insights into the possible mechanisms through which an episode of severe malnutrition may increase the risk of later school failure derive from an aspect of these studies which examined the impact of an episode of severe malnutrition or the manner in which children respond to demands for cognitive function. Response style was assessed in the course of the administration of a standard test of intelligence in accordance with a method that utilized a logic tree to describe responses to the test demands (Hertzig et al., 1968). Responses were initially characterized as work or not-work, depending on whether or not the child attempted to do what was asked of him. Both work and not-work responses were additionally characterized in terms of whether or not they were verbally expressed. Not-work responses were further analyzed in the following categories: passive unresponsiveness, the substitution of another activity, refusals couched in terms of the child's perception of his own level of competence, or requests for aid.

The nature of the home environment proved to be most strongly associated with response style. Children who derived from more stimulating homes as measured by the Caldwell Inventory were more likely to respond to a demand with a work response than were childen from less stimulating homes. They verbalized more throughout the test, and a high proportion of their not-work responses were expressed in terms of competence. In contrast, children from less stimulating homes verbalized less often and their not-work responses were predominantly expressed passively and as requests for aid. However, a history of previous malnutrition was associated with an exaggeration of this response style. Such children were even less likely to initiate work, were less verbal, were more often passively unresponsive, and requested help more frequently than children who had not been severely malnourished and were living in similar homes (DeLicardie & Cravioto, 1974).

These stylistic differences may well contribute to the low levels of intellectual and academic attainment frequently reported in previously malnourished children. A child who is typically passively unresponsive when faced with a cognitive demand may, in a conventional educational setting, be viewed as uninterested, unmotivated, or inattentive. His relative lack of verbal skills may make it difficult for him to explain his behavior even if directly asked. His frequent requests for help may reinforce a view of him as immature and not ready to learn. As a consequence, fundamental skills may not be adequately acquired and later progress may be further inhibited.

The association between styles of response to demands for cognitive functioning and the nature of the home environment suggests that early life experiences are critical to their development. The exaggeration of a particular style in survivors of an episode of severe malnutrition is unlikely to occur as a direct consequence of injury to the nervous system. Rather, as Cravioto et al. (1966) have indicated, severe malnutrition may interfere with development and learning in at least three indirect ways:

1. Loss of learning time: Since, at the very least, a child who is malnourished is less responsive to the environment during the period of acute illness, time in which to experience and to learn is lost. On the simplest basis, therefore, such a child would be expected to show some developmental lags.

2. Interference with learning during critical periods of development: Learning is by no means simply a cumulative process. Interference with the learning process at specific times during its course may result in disturbances in function that may be of long-term significance.

Such disturbance is not merely a function of lost time. The correlation of experiential opportunity with a given stage of development also appears to be important. It is possible that exposure to malnutrition may interfere with development at critical points in a child's growth and so result in either abnormalities in the sequential emergence of competence or a redirection of the developmental course in undesired directions.

3. Motivation and personality changes: It should be recognized that the response of a mother to her infant or young child is, to a considerable degree, a function of the child's own characteristics of reactivity. One of the first effects of malnutrition is a reduction in the child's responsiveness to stimulation and the emergence of various degrees of apathy. Apathetic behavior in its turn can reduce the value of the child as a stimulus and diminish the adult's responsiveness to him. Thus apathy can provoke apathy and so contribute to a cumulative pattern of reduced adult-child interaction. If this occurs it can have consequences for stimulation, for learning, for maturation, and for

interpersonal relations. This process may result in significant backwardness in performance on later more complex learning tasks.

Other severe illnesses sustained by the infant or young child may affect future development and learning in similar ways. The duration and timing of illnesses other than kwashikor or marasmus may also result in an absolute loss of learning time. The orderly progression of skill acquisition may be interfered with as well. The increased demandingness and irritability of the chronically or frequently ill young child may also contribute to alterations in both the quality and quantity of mother-child interactions, with similar negative consequences for development.

These inferences with respect to the relationship between illnesses other than severe malnutrition sustained during the pre-school period draw support from the results of studies that have explored the consequences of hospitalization during the first five years of life. Although single admissions to hospital for less than one week carry no increased risk of later behavioral or educational disturbance (Douglas, 1975; Quinton & Rutter, 1976), repeated admissions or admissions of more than a week's duration are associated with an increased risk of both poor reading and behavioral disturbance in adolescence (Douglas, 1975). This association is explained neither by the initial selection of children for hospitalization nor by the physical disabilities they sometimes carried into later life, although it is most marked among children who come from disadvantaged homes (Quinton & Rutter, 1976). Children who were hospitalized frequently or for prolonged periods of time during the preschool period tended to be inattentive in class and to exhibit poor work habits. Outside of school they were more troublesome, more likely to be delinquent, and more likely to show unstable job patterns than those who were not admitted during the first five years of life (Douglas, 1975). Thus it may well be that the preschool years are critical for the consolidation of behaviors necessary to insure both the development of socially appropriate patterns of behavior and "readiness-to-learn," years that are disrupted by frequent and prolonged absences from home.

It should be noted, however, that only a small minority of educational or behavioral disorders are associated with repeated hospital admissions during the preschool years. Such events account for little of the variance in children's behavior (Quinton & Rutter, 1976). Moreover, some preschool children seem to actually benefit from hospitalization, since some mothers' reports indicated that children had become more talkative and lively or more independent upon return home. The children most vulnerable to early admissions are those who are highly dependent on their mothers or who are under stress at home at the time of admission (Douglas, 1975).

Thus, although ill health during the preschool period increases the risk of later educational difficulties, not all children so exposed experience ill effects. Interactions among the intrinsic characteristics of the child, and the nature of his illness, as well as aspects of both his pre- and post-illness experiences, serve to define the particular response of each individual child to early illness.

What, then, is the relationship between current health status and educational attainment

The best available overview data relevant to this question are provided by the epidemiologic studies of the English investigator, Michael Rutter, and his colleagues, both on the Isle of Wight and in the city of London (Rutter, Tizard, & Whitmore, 1970; Rutter, Cox, Tupling, Berger, & W. Yule, 1975a; Berger, W. Yule, & Rutter, 1975; Rutter, B. Yule, Quinton, Rowlands, W. Yule, & Berger, 1975b). Of the total population of children between the ages of nine and twelve years living on the Isle of Wight, 5.7% were found to have physical disorders including such conditions as asthma, eczema, uncomplicated epilepsy, cerebral palsy, orthopedic conditions, heart disease, and diabetes. A significantly higher proportion of these children were reading at levels below that expected on the basis of their age and intelligence than was the case among healthy children. Thus it can be seen that the likelihood of scholastic difficulty is clearly increased in the presence of physical illness.

Is this increase uniform, or does specificity attach to the type of handicapping condition?

Conditions affecting the health of children may be broadly divided into those that involve the central nervous system and those in which the integrity of the central nervous system is unimpaired. Scholastic difficulties tend to be much more common and severe in children with disorders affecting the central nervous system. While the intelligence of children with physical disorders not involving the brain is similar to that found in the general population, children with structural disorders of the brain have a significantly lower average level of intelligence. Children with uncomplicated epilepsy, however, have IQ's close to the population average. Both reading backwardness (i.e., reading level below that expected on the basis of chronologic age) and specific reading retardation (i.e., reading level below that which would be expected when both IQ and age are statistically accounted for) occur significantly more often in children with disorders of the nervous system than in children with other types of physical handicaps[2] (Rutter, Tizard, & Whitmore, 1970).

Thus it would appear that different mechanisms may well be associated with the emergence of educational difficulties in children with different types of physical handicap. It has been suggested that conditions of ill health may contribute to the development of educational problems directly as a consequence of alterations in such central nervous system mediated functions as perception, sensory integration, motor organization, or attention, all of which are central to the learning process; or indirectly in association with increased absence from school, interference with learning at critical periods of development, and reduction in responsiveness or in motivation (Birch, 1968). When control is introduced over some of the possible indirect effects of illness on school progress, by comparing equivalently crippled children with and without brain damage, lower levels of intelligence and specific reading difficulties continue to be more commonly found in the brain-injured group. These findings lend additional support to the view that cerebral injury in early life tends to cause both general and specific cognitive deficits (Seidel, Chadwick, & Rutter, 1975).

Is there any systematic relation between the type of injury to the central nervous system and the type of cognitive deficit sustained?

Despite the hope expressed by Bortner (1979), direct evidence in this regard is scanty. Children with focal epilepsy, particularly those in which the disorder is localized in the left hemisphere, tend to have lower reading levels than children with electrographically generalized epilepsy (whose educational attainments do not differ from those of nonepileptic controls) (Stores & Hart, 1976). These findings are consistent with those of Kershner and King (1974) who, in comparing hemiplegic children matched for full scale IQ, found that those with left-sided lesions did less well on tests of verbal intelligence, whereas those with right-sided lesions did less well on visual-motor function tests. Brain-disordered children tend to have WISC performance scores significantly lower than verbal scores, but this tendency is not great enough for a verbal-performance discrepancy to be of any value in the diagnosis of "brain-damage" (Bortner, Hertzig, & Birch, 1972; Rutter et al., 1970). Despite a lack of specificity with respect to cognitive organization, reading backwardness and specific reading retardation are among the most important handicaps of children with cerebral palsy or epilepsy, and any program of comprehensive care for these children must be concerned with their educational progress as well as other aspects of their development.

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[2] Rutter (1974) has indicated that backwardness in reading must be distinguished from specific reading retardation because, although both IQ and academic achievement can be considered as criterion measures (Gordon, 1977), they do not tap the same aspects of a given child's performance. Within a population, approximately equal numbers of children achieve reading scores above and below their level of measured intelligence, indicating that mental age and reading age do not run exactly in parallel. The distinction between general backwardness and specific retardation is of importance both in the understanding of the mechanisms underlying poor school performance and for suggesting directions for remediation. Specific reading retardation, as defined, can occur in children at all levels of intelligence although it occurs more commonly in those whose IQ is close to the average for the population.

Rutter (1977) has cogently argued that there are no really reliable and valid means of diagnosing brain damage when there are no localizing neurologic abnormalities and when there is no history of clean-cut brain-injury or disease. Nonlocalizing signs of central nervous system dysfunction, such as disturbances in speech, abnormalities of gait and muscle tone, coordination deficits and the like, may occur as a consequence of brain damage, mental retardation, specific maturational disorders, or a combination of these (Rutter et al., 1970b). Nevertheless, Rutter (1977) has estimated that in about five percent of the population the presence of so-called "soft" signs is probably associated with damage to the brain.

Is the school performance of this group of children affected as well?

A number of studies have described an increased frequency of occurrence of "soft" neurologic signs in children with school learning problems (Adams et al., 1974; Bortner et al., 1972; Hart, Rennick, Klinge, & Schwartz, 1974; Hertzig et al., 1969; Rutter, Graham, & Birch, 1966; Stein, Saratsiotis, & Mosser, 1975), but data are not as readily available that would permit us to determine with any degree of precision the number of children who exhibit such "soft" signs and who also have learning difficulties. The presence of "soft" signs is entirely compatible with a normal developmental course. No abnormalities with respect to intellectual level, academic school achievement, or behavioral organization were found in 10 of 20 prematurely born children who exhibited "soft" signs on clinical neurologic examination (Hertzig, Note 1). Moreover, "soft" signs have been found in as many as 8% to 30% of otherwise normal children

(Adams et al., 1974; Peters, Roming, & Dykman, 1975; Rutter et al., 1970b; Wolf & Hurwitz, 1973). Whereas children with presumptive, as opposed to definitive, evidence of abnormalities in the organization of the central nervous system are at greater risk for the development of school learning difficuties, this is by no means an inevitable outcome. Moreover, it should be recognized that specific reading retardation in and of itself is not evidence of brain damage. As Rutter and Yule (1976) have indicated:

> Specific reading retardation commonly arises on the basis of a developmental impairment (often involving speech, language or sequencing functions) which may be due to genetic factors, a relative failure in cerebral maturation, brain damage, a lack of suitable environmental stimulation or a combination of these factors. The developmental impairment is often associated with adverse temperamental features, and these factors interact with family features, social circumstances, and school influences to give rise to reading difficulties. The pattern of factors and their mode of interaction varies from child to child and requires individual assessment. (p. 571)

Disorders of the central nervous system increase the risk of scholastic difficulty in affected children to a greater extent than other physical disabilities. Nevertheless, children with nonneurologic disorders may have significant problems with respect to school learning as well. Data from the Isle of Wight provide detailed information with respect to the educational attainments of children with physical disorders that do not involve the brain (Rutter, Graham, & Yule, 1970). Consideration was confined to children who, in the previous 12 months, had suffered from a chronic handicapping condition (including asthma, eczema, orthopedic conditions, heart disease, diabetes mellitus, deafness, and neuromuscular disorders with lesions below the brain stem). Acute disorders such as bone fractures or appendicitis were excluded. Also excluded, because of problems in the establishment of reliable definitions, were children who suffered from chronic respiratory tract infections and chronic headaches. The intellectual level of children suffering from these chronic handicapping disorders was equivalent to that of the general population. However, a significantly greater number were reading at levels below that to be expected on the basis of their age and intelligence.

In part, it was possible to account for the increased frequency of occurrence of specific reading disability in chronically ill children on the basis of an increase in absence from school, suggesting that loss of learning time may have played a role in the evolution of the educational disorder. This association was particularly marked in the asthmatic children, in whom intellectual level per se tended to be slightly above that of the general population. These children had repeated short absences from school. Children seem to compensate fairly well for a single prolonged absence, perhaps because systematic efforts to insure that progress in school work is maintained at home or in hospital are frequently engaged in. This is much less likely to occur after absences of only one or two days, even if such brief interruptions in school attendance occur repeatedly. Moreover, a pattern of short but frequent absences may contribute to a loss of morale and confidence. The effects on children's attitudes toward work may be as important as actual school time missed. These effects may well be minimized if regular efforts are made to insure that children are provided with an opportunity to become acquainted with work missed whenever they have been absent from school, regardless of duration of the absence.

Although data from the Isle of Wight tend to show that school absence is not associated with specific reading retardation within the general population (Rutter et al., 1970b), these studies do not provide information with respect to the association of school absence with social class. It would not be unreasonable to assume, however, that the impact of frequent absence occasioned by intercurrent infections (which were not specifically examined in the Isle of Wight studies) would be similar to that experienced by asthmatic children. Poor nutritional status, particularly if accompanied by increased opportunities for the transmission of infection as a consequence of crowding in suboptimal living conditions, is associated with an increased rate of illness. These circumstances are typical of many children from lower socioeconomic groupings, who thus have an increased likelihood of experiencing disruptions in the orderly acquisition of knowledge (Birch & Cravioto, 1968; Birch & Gussow, 1970; Birch, 1972).

Furthermore, inadequate nutrition is a frequent underlying cause of iron-deficiency anemia. Although the conventional view of the anemic child is of one who is pale, tired, apathetic, and irritable, the consequences of iron deficiency are more widespread. Children enrolled in Head Start programs who were iron-deficient have been found to have lower IQ scores than those with a normal hematologic picture. Moreover, in studies of some 200 Philadelphia school children, 12 to 14 years of age, deriving from an economically deprived community, one-half were identified as having hypochromic, microcytic anemia, presumably on the basis of iron deficiency. Composite scores on the Iowa Test of Basic Skills--reading comprehension, vocabulary, arithmetic concepts, problem-solving--were significantly lower in the anemic group. Performance was poorest in the older boys, suggesting a cumulative effect. In addition, more of the anemic children were singled out by their teachers (who were unaware of their hematologic status) as restless and disruptive in class (Oski, 1976).

Are such problems attributable to iron deficiency?

Oski (1976) has pointed out that animal studies have suggested that chronic iron deficiency may cause a reduction in metochondrial monoamine oxidase (MAO), which is crucial to the catabolism of monamines in the brain and elsewhere.

Some human evidence also lends support to the view that the most serious penalties associated with iron deficiency may lie in subtle effects on mental processes and behavior mediated by altered metabolism of brain catecholamines. The implications of these findings, if confirmed by further studies, are serious indeed, in view of the fact that iron deficiency anemia is common among inadequately nourished children.

The data from the Isle of Wight clearly indicate that the risk of encountering scholastic difficulty is increased as a consequence of ill health during the school years. It is not unreasonable to assume that conditions of ill-health, not specifically examined in the course of these epidemiologically based surveys, have an impact on school learning as well. This is certainly the case for iron-deficiency anemia secondary to inadequate nutrition, and most probably, for acute intercurrent infection. It is important to realize, however, that not all physically ill children do poorly in school. The fact that 50% of children with definite neurologic disorders are two years below age-expected levels in reading implies that 50% of such children are not. Furthermore, the fact that almost one-fourth of neurologically impaired children are specifically retarded in reading implies that almost three-fourths have reading skills commensurate with both their age and level of intelligence. Similarly, almost three-fourths of children with physical illnesses not related to the central nervous system show no evidence of general backwardness in reading, and more than 85% are reading at levels to be expected for their age and level of intelligence (Rutter, Tizard, & Whitmore, 1970).

How may we expand our understanding of the differential impact of physical illness on the educational process?

The question of why the experience of physical illness has a negative effect on the educational progress of some children and not of others may be approached in terms of (a) a consideration of extra-illness characteristics of affected children and (b) an examination of features of the familial and broader social environments in which such children grow and develop. In the following discussion the impact of two extra-illness characteristics of children are illustratively explored. These are concomitant behavioral and/or emotional disturbance and individual differences with respect to the organization of temperamental attributes.

Behavioral and emotional disturbances occurring in association with physical illness may serve to compound scholastic difficulties. The nature of the disturbance may directly interfere with learning, particularly if the symptoms include a marked degree of motor restlessness, poor concentration, inattention, and impulsivity. Such symptoms, especially if severe, may make it virtually impossible for the child to be contained or appropriately managed in ordinary classrooms, and the lack of availability of appropriate special educational settings may further impede educational progress. In addition, educational failure in and of itself may predispose to the development of emotional or behavioral disorder. Failure to read adequately may be a potent source of discouragement, loss of self-esteem, and antagonism.

School can become a negative experience that is strongly associated with failure. A child in such a situation is likely to have become discouraged and miserable. Although not a prime cause of educational failure, such motivational factors may play an important role in the perpetuation of school learning difficulties.

Physical illness is associated with an increased risk of psychiatric disorder. On the Isle of Wight the number of physically ill children who were also psychiatrically disturbed was two-and-one-half times that in the general population. Children with epilepsy and other neurologic disorders showed rates three or four times that in the population at large (Rutter, Tizard, & Whitmore, 1970). Although, in part, this high rate of disturbance may be attributed to the severity and visibility of the handicapping condition, the prevalence of psychiatric disorder is still almost twice as high among children crippled by cerebral palsy as among those with muscular, peripheral nervous system, or orthopedic crippling conditions (Seidel et al., 1975).

Except for a small increase in the number of children with psychosis or hyperkinesis, no specificity attaches to the type of emotional or behavioral disorder found in children with overt neurologic disease. Equivalent proportions of both brain-damaged and non-brain-damaged children were considered to have conduct disturbances as opposed to neurotic and/or emotional difficulties. Moreover, the specific symptoms of brain-damaged children with psychiatric disorder are similar to those of non-brain-damaged children. Only a slight and insignificantly greater number of brain-injured children with psychiatric disorder had disturbances of attention and of activity than was the case for psychiatrically disturbed childen without localizing findings (see footnote 1) (Rutter, 1977). Furthermore, Shaffer (1976), by comparing children with conduct disturbances and overt neurologic disease present either in isolation or in combination, has shown that impulsiveness and overactivity have no association with neurologic abnormality per se, but are significantly more common in childen with conduct disorders, irrespective of neurologic status. These data clearly indicate that although at increased risk for the development of psychiatric disturbance, children with overt neurologic disease are behaviorally heterogeneous.

What about children with presumptive as opposed to definite evidence of cerebral injury or dysfunction?

Data with respect to the frequency and type of psychiatric disturbance in this group of children are much less readily available. Circumstantial evidence suggests that the presence of "soft" neurologic signs is also associated with increased psychiatric risk. Children already identified on the basis of the presence of psychiatric disorder have been found to have an increased frequency of occurrence of "soft" signs (Hertzig & Birch, 1966, 1968; Kennard, 1960).

When children with and without "soft" signs are specifically compared, behavioral disturbances are found to occur significantly more frequently in the "soft" signs group. The type of behavioral disturbance, however, is extremely variable, ranging from neurotic disorder to hyperkinesis (Hertzig, Note 1).

Thus the type of psychiatric disturbance found in children with presumptive evidence of brain damage or dysfunction is no more specific than that found in children with overt neurologic disorder. Nor is hyperkinesis a regular part of a symptom picture. Hyperactivity, noted in the course of the neurologic examination of children in special educational placement, occurred with equal frequency among those children with evidence of overt neurologic disease, those with so-called "soft" signs, and those whose neurologic examinations were entirely within normal limits (Bortner et al., 1972). Although the hyperactive child syndrome probably has sufficient distinctive features to warrant its isolation as a separate psychiatric condition (Cantwell, 1975), children so affected are etiologically heterogeneous. In some cases the disorder may be due to a structural abnormality of the brain (Werry, 1972); in others there may be abnormality of physiological arousal of the nervous system (Satterfield, 1974), and in others there may be a genetic basis for the disorder (Cantwell, 1976a; Morrison & Stewart, 1974). Rutter (1977) has argued convincingly that such behavioral features as hyperactivity and attentional deficits cannot be considered to be specific indicators of brain injury. These symptoms may be found in association with all types of psychiatric disturbance. They are a particularly common occurrence in conduct disorders, which in and of themselves are strongly associated with school learning difficulties. The fact that children with both definite and presumptive evidence of brain injury exhibit a heterogeneous range of psychiatric disorder, without specific features, makes it necessary to reject the behavioral stereotype of the brain-injured child. Just as the learning patterns of brain-injured children do not conform to a single pattern (Bortner et al., 1972; Bortner, 1979), neither does their behavior. Appropriate educational intervention must be based upon the appreciation of individuality with respect to both behavioral and cognitive attributes as well as to the nature of their interaction.

Although the risk of psychiatric disturbance in children suffering from illnesses that do not involve the nervous system is less than for those with brain conditions, it is still greater than among healthy children. There is, however, nothing characteristic about the type of psychiatric disorder associated with any particular type of physical illness (Rutter, Tizard, & Whitmore, 1970). Somewhat surprisingly, crippled children with severe physical incapacity appear to be less likely to develop psychiatric disorder than those with milder degrees of impairment. Perhaps more severely crippled children adjust to the fact that they will not be able to participate in society at a level equivalent to that of nonhandicapped persons. Children with mild handicaps, on the other hand, may experience more difficulty in coming to terms with their disability just because there are many activities in which they feel themselves and are perceived by others to be capable of functioning normally (Seidel et al., 1975).

Disturbances in learning, particularly if they arise after a successful early start, may develop as consequence of emotional disorder (Pearson, 1952). Rutter (1974) has concluded, however, that psychiatric disorder per se plays only a minor role with respect to the primary causation of learning difficulties. Nevertheless, emotional difficulties often exacerbate and contribute to the chronicity of learning difficulties that arise for other reasons. Specific reading retardation, in and of itself, is strongly associated with the development of conduct disorders. Why this should be so is not entirely clear, but it appears that it is rare for the disorder of conduct to antedate the onset of the reading difficulty. Nevertheless, the presence of a conduct disturbance places an additional burden on efforts at remediation. Not only is early intervention with respect to failure to make adequate progress in the acquisition of basic skills important in its own right, but it may actually prevent the emergence of a particular type of psychiatric disturbance notoriously refractive to effective treatment.

What behavioral characteristics of children, short of frank psychiatric disorder, may in interaction with physical health status, influence the educational process?

Others have spelled out in considerable detail the relationship between characteristics of temperamental organization and classroom behavior together with its relevance to the learning process (Thomas & Chess, 1977; Rutter, 1974). Are basic patterns of temperamental organization affected by acute and chronic illness, and, if so, how? Available evidence (Thomas & Chess, 1977) deriving from studies of prematurely born children, children with congenital rubella, and children with mild mental retardation, does not suggest that there are major or systematic differences in patterns of temperamental organization in children who have been exposed to conditions of risk of damage to the central nervous system or who have sustained an actual insult to the nervous system as compared with children whose nervous systems appear intact. Thus a wide range of temperamental constellations can be expected to occur in children who have dysfunctional nervous systems, some of which may be of a nature to make adjustment to classroom routines and procedures as well as the assimilation of formal learning content more difficult. Children with such temperamental attributes as irregularity, intensity of response, withdrawal reactions to new situations, slow adaptability, and negative mood are likely to develop behavioral disturbances in circumstances when there is a lack of consonance between the child's individual characteristics and environmental expectations (Thomas, Chess, & Birch, 1968). Mentally retarded children with difficult temperamental attributes are especially vulnerable to the development of behavioral disorder in response to environmental demands for socialization (Chess & Hassibi, 1970).

The increased vulnerability of children with both overt and presumptive central nervous system disorders to the development of behavioral disturbance may well reflect a generally increased vulnerability to stress that may be further exacerbated in those children with difficult temperamental attributes. If the child has a specific learning disability in addition, the likelihood of the development of maladaptive patterns in response to the stress of school failure may be heightened. However, this process need not progress to the stage of a full-blown psychiatric syndrome for there to be an impact on the learning process. Some children may have relatively minor, although still significant, alterations in the rhythmicity of their functioning. Although all children have good and bad days, variability in performance from day to day may be more common in children with central nervous system dysfunction. In addition, although the organization of a given child's behavior may be stable enough to insure smooth functioning when optimal levels of environmental support are available, minimal alterations in environmental circumstances or internal state (e.g., in association with intercurrent illness) may bring temporary disorganization and a consequent negative impact on the learning process.

Once temperamental style has become stabilized (and most children do eventually establish regular schedules, are adaptive, only moderately intense and generally cheerful in routine circumstances), exposure to new situations may result in the reemergence of original and more difficult temperamental attributes. In children with disordered or damaged nervous systems, novel experiences may have the same consequences, with the exception that a greater range of minimal environmental alterations may be perceived as novel. Thus minor modifications in routine, either at home or in the classroom, or brief absences from school as a consequence of intercurrent illness or vacation, may be particularly poorly tolerated. Children so affected may require a longer period of "settling in" to reestablish and stabilize usual patterns of behavior after such disruptions.

Little is specifically known about temperamental organization in children with noncentral nervous system related chronic illnesses, although it would seem unlikely that children so affected would differ in significant respects from other groups of children. It would be of considerable interest and importance, however, to be able to define how some of the impact of chronic illness on the learning process as a consequence of loss of learning time, withdrawal of interest and attention, preoccupation with somatic complaints, restlessness, discouragement, and loss of morale and self-esteem may be either exaggerated or minimized by temperamental attributes. Schowalter (1977) has suggested that these reactions are particularly likely to occur in conjunction with debilitating illness during adolescence. Perhaps at no other age is illness as shameful as during this age period when body strength and looks are so important for self-esteem. Bodily illness expecially lowers adolescents' self-esteem and places in jeopardy the formation of a positive and productive ego-ideal. In addition, loss of self-esteem may foster illness and thus contribute to an exacerbation of its negative consequences.

How does the familial and broader social environment affect the learning and behavior of the physically ill child?

The child with a physical illness does not grow and develop in a vacuum, but in an environment defined by both the characteristics of his family and the broader social attributes of the world around him. The characteristics of his immediate and broader environments have an impact both on the frequency of occurrence of physical illness and on the consequences of illness for learning and behavior. Rutter and his colleagues (Rutter et al., 1975a; Berger et al., 1975; Rutter et al., 1975b) have demonstrated that specific reading retardation and psychiatric disturbances are twice as common in ten-year-old children attending school in the city of London than in children of the same age living in the Isle of Wight. In an elegant series of analyses they were able to show that within each geographic locale social disadvantage, family discord, and parental psychiatric disturbance, as well as such characteristics as high teacher turnover, were associated with an increased rate of disorder. The difference between the two areas was explicable in terms of the more frequent occurrence of adverse circumstances, both singly and in combination, in the city of London.

These relationships may modify the educational and behavioral consequences of physical illness in the following ways. If there is an increase in the occurrence of physical illness in children growing and developing in more disadvantaged social circumstances, the impact of illness would directly add to the frequency of occurrence of both educational and psychiatric handicap. In addition, adverse social and familial circumstances may function to further exaggerate the negative impact of physical illness on educational progress even if there is no increase in absolute frequency. Curiously, the analysis of data based on global measures of social disadvantage and family adversity do not reveal that these factors interact to potentiate the negative consequences of damage to the nervous system for learning and behavior (Seidel et al., 1975). Rutter (1977) has suggested that the absence of discernable interactive effects may be a result of the insensitivity of the measures employed. Alternatively, it is possible that the particular behavioral characteristics of a given neurologically-impaired child may cause significant people in his environment to behave differently toward him than toward other individuals. This difference in the behavior of significant others may serve to increase the amount of psychosocial stress experienced by the child. Thus the risk of school failure in the neurologically-impaired child may be further increased as a consequence of these transactional effects rather than as a consequence of an increase in susceptibility to stress per se. Transactional effects may become particularly important if the general level of social and familial stress is high, making it more difficult for parents and other family members to tolerate even mildly deviant behavior (Rutter, 1974). A similar set of relationships may well apply in relation to behavioral patterns that may occur in some children who have presumptive, as opposed to overt, neurologic disorders or other forms of either acute or chronic illness.

The data reviewed serve to illustrate that a variety of conditions of ill health may place the child exposed to them at increased risk of school failure and/or underachievement. These conditions span the lifetime of the child, and include events that occurred even prior to his birth as well as his current health and nutritional status. The health history of his mother and her health and nutritional status during pregnancy are systematically related to prematurity and other complications of labor and delivery. These events are clearly associated with an increased frequency of occurrence of both overt neurologic disease and disturbances in the functional organization of the central nervous system. Illnesses sustained prior to school entrance may also affect later school performance. The most striking in this regard is severe malnutrition, but frequent or prolonged hospitalizations for a wide variety of other reasons also increase the risk of later school failure. Subnutrition, as opposed to acute malnutrition, undoubtedly plays a role both in regard to increased susceptibility to infection and to increased severity of illness once contracted. Furthermore, inadequate nutrition predisposes to the development of iron deficiency anemia with its own negative consequences for school achievement and behavior. Current illnesses involving the central nervous system impose an additional burden. Although the risk of school failure in association with noncentral nervous system related illness is less, it is still above that found in healthy children.

Each of these conditions, as well as others not specifically considered herein, carry a differential level of risk for school failure and underachievement. In all circumstances, the degree of risk is modified by other characteristics of the child, as well as by the environment in which he is growing and developing. The presence of overt psychiatric disturbance may compound educational difficulties as may difficult temperamental attributes. Alternatively, the negative impact of illness on school performance may be minimized in children who are temperamentally easier or more congenial. Social circumstances and features of familial organization may also serve to either augment or minimize the association between ill health and poor school performance.

Studies of populations or groups of children who have been exposed to particular adverse conditions can establish the fact of increased risk. Risk, however, is not equivalent to certainty. To define conditions which place a child at increased risk of damage to the nervous system is in no way equivalent to defining the fact of damage. Moreover even in the presence of disease or dysfunction of the nervous system, educational progress is not invariably impaired. Even if educational and/or behavioral difficulties do arise in physically ill children, little or no specificity attaches to the type of associated impairment. When school failure does occur, its management is influenced by the type of cognitive impairment, as well as by the characteristics of the child and his familial and broader social environment. The presence of behavioral and emotional disturbances may make it more difficult to provide appropriate interventions. Temperamental attributes and features of cognitive style contribute both to behavioral and learning individuality and must be taken into account prescriptively. Educational prescriptions must also be based upon a realistic assessment of available resources and the capacity of both family and school to utilize them appropriately. A somewhat less than optimal intervention that can be carried out is much to be preferred to a plan that, although perhaps more desirable in the abstract, cannot be effectively implemented.

Thus the careful definition of the individual characteristics of a particular child are of primary importance in the formulation of an educational prescription. In this context it is perhaps appropriate to note that biologic variation within the normal range may also bear a relation to school performance and behavior.

Although a detailed examination of this issue is outside the scope of this chapter, the following brief examples will serve to underscore the importance of an appreciation of individual differences in this area as well. Individual differences in receptor preferences and intersensory organization may underlie the development of particular learning styles. Educational progress may well be facilitated by the identification and definition of individually successful approaches to skill and knowledge acquisition. It has long been recognized that a single mode of presentation is not equally effective for all children. Knowledge of differences in how children learn can lead to an increase in the variety of teaching strategies within the classroom and provide a basis for the development of individually appropriate habits of self-study. Individual differences in biologic rhythms may be reflected in variations in attention and interest. While most children accommodate to the usual school schedule without difficulty, some children may take longer to wake up and "get into" the day's activities. Others may be at their best during the morning and show signs of considerable fatigue during the afternoon. It is possible that idiosyncratic patterns of success and failure may be related to the timing of the presentation of particular subject matter during the school day.

What are the implications of the relationships between health status and educational progress?

From the point of view of public policy, the implications of the association between ill health and less than optimal school performance are the same today as they were over 10 years ago when Birch (1968) noted that "unless health and education go hand in hand we shall fail to break the twin curse of ignorance and poverty." Improvement in the life circumstances of those individuals within society who are at greatest risk of ill health is essential. Systematic attention to the health and nutrition of pregnant women, infants, and young children; scheduled immunizations; the sensitive monitoring of early developmental progress; provision for the prompt and effective treatment of illness as it occurs in young children; and discriminating use of hospitalization all can contribute to improvement in the health status of children prior to school entrance. In addition, improvements in the standard of living of the poor in the form of better housing, improved employment opportunities, increased income, adequate provisions for day care of children of working mothers can go a long way in reducing the familial stresses that accompany social adversity.

Health and developmental assessment at school entrance will facilitate the identification (if it has not occurred prior to this time) of visual, auditory, and dental problems that require treatment. In addition, such examination will permit the identification of children with developmental delays or deviations that may impede their progress (Bax, 1976), or minor physical anomalies that may be associated with poor performance (Rosenberg & Weller, 1973). Progress of all children in the early grades needs to be monitered closely so that difficulties or delays in the acquisition of primary skills should be addressed as soon as they are noted. If problems truly reflect a maturational lag that will spontaneously resolve in time, no harm attaches to the provision of an individually designed program of instruction. On the other hand, only systematic intervention can insure adequate academic progress in the child who is destined to develop a specific reading disability. The design of specific interventions for the child who fails to progress adequately when provided with the usual instructional opportunities must be based upon the assessment of each individual child's pattern of strengths and weaknesses. There is little evidence that any particular approach to the development of reading skills offers advantages over any other (Belmont et al., 1973).

The ordinary classroom teacher will and should be responsible for the education of most handicapped children. However, the classroom teacher should be able to turn to educational consultants for advice about teaching approaches and methods.

The availability of additional specialized instruction, either on an individualized or on a small group basis, in resource rooms closely integrated with on-going classroom work, may well provide children with even fairly severe educational handicaps with an opportunity to make adequate progress (Boder, 1973, 1976). Although there is some evidence that severely crippled children develop fewer emotional problems and make better academic progress when placed in special classes where expectations can be closely tailored to capacity (Seidel et al., 1975), in most instances special classes should be employed only when these other educational measures have failed and/or when the severity of symptoms of behavioral disturbance impose a significant degree of additional stress on the child, his classmates, and his teacher.

Overactive children may pose a particular problem for teachers. Most children of this type can tolerate and will need to remain in a regular classroom. Such simple measures as placing the child close to the teacher and away from distractions may be helpful. One-to-one attention through the use of teacher aids may also be useful. The introduction of regular physical activity, both for the class as a whole and for the restless youngster in particular, in the form of tasks that require gross physical activity (passing out books and paper, running errands, erasing the board) may also be important. For children with significant learning problems, thorough assessment and appropriate remediation are also indicated (Cantwell, 1976b).

Children with a wide range of behavioral and learning problems respond well to stimulants, and appropriate medical evaluation is indicated if a satisfactory response to environmental manipulations is not obtained (Sandberg, Rutter, & Taylor, 1978). Wender (1977, 1978) has recently reviewed studies of the effectiveness of diets free of food additives (the so-called Feingold diet) and has concluded that although global changes in behavior can be detected easily in open clinical trials, there is a striking reduction in discernable effects under controlled double-blind conditions. More careful research is clearly needed. The diet itself appears to be nutritionally sound except for the need for vitamin C supplementation. There is most probably no reason to urge families to discontinue the diet if they note favorable change. It is, however, necessary to be alert to the possibility that the child may require additional psychiatric or educational intervention.

The common practice of developing special classes for specific diagnostic and administrative categories of children needs to be carefully reassessed. The lack of either cognitive or behavioral specificity that attaches to disorders of the central nervous system suggests that homogeneous classes are unlikely to occur even when children with similar diagnoses are grouped together (Bortner, 1979). Special classes derive their importance primarily because a reduced census provides opportunities for the maximization of individualized instruction.

Although class size is not significantly related to the performance of children in ordinary schools (Rutter, 1975b) its importance for the maintenance of teacher morale cannot be minimized. There is good evidence to suggest that, in schools with high teacher turnover rates, the educational progress of children is impeded (Rutter, 1975b). Consequently this and other measures such as appropriate administrative support, easily obtainable consultation, and the organization of classes that avoids overburdening some teachers with an excess of troublesome children are important features of the organization of schools. Moreover, if the ordinary classroom teacher is, as is appropriate, expected to provide instruction for children with chronic physical handicaps, they must be specifically informed about the nature of the handicaps, the nature of the treatment prescribed, and the possible side-effects of medication. Close liaison between the school and the physician responsible for the medical management of the child needs to be developed and maintained.

Appropriate psychiatric consultation for children with emotional and behavioral problems should be readily available and easily obtained. Psychiatric assessment must include the evaluation of adjustment to and progress in school, and plans for intervention must address themselves to problems in these areas, as well as those that may be more indicative of a direct reaction to familial discord or intrapsychic psychopathology. The impact of treatment on school learning and behavior needs to be frequently assessed, and plans and procedures modified accordingly. Absences from school for elective medical intervention should be carefully planned and mechanisms should be developed for ensuring that the child is provided with opportunities to make up work missed as a consequence of absence for any reason.

Reduction in susceptibility to intercurrent infection through the maintenance of adequate nutrition and general physical fitness is also important in reducing the disorganizing consequences of repeated absence from school. The problem of persuading people to change their habits of food preference and preparation is a complex one that has been sorely neglected (Warren, 1973). Unfortunately, most approaches to nutrition education tend to have moralistic and punitive overtones that substantially reduce their effectiveness. Ways of helping both parents and children to eat in a manner that ensures adequate nutritional intake, while simultaneously respecting individual variations in taste and rhythms of hunger, need to be developed.

Ill health imposes a burden on the normal unfolding of development. Some children may carry this burden lightly, and few if any ill effects may be manifestly visible. For others the burden may be of sufficient degree to interfere with the organization of behavior and to impede educational progress. Whether or not this occurs is impossible to predict with certainty. Risk rates vary in accordance with the type and severity of insult, as well as in relation to other attributes of the child and his familial and broader social environments. Little specificity attaches to negative consequences when they do occur. Consequently, plans for intervention cannot be based on the predetermined assumption of stereotyped expectations with respect to either cognitive or behavioral organization. Only the careful assessment of the individual strengths and deficits of a particular child can provide the basis for the development of strategies that will most effectively minimize or overcome educational disabilities that may occur in conjunction with physical illness.

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CHAPTER 11

Affective Response Tendency

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Identification and Definition of the Category

The definition and conceptualization of the psychological phenomena we term affect are still subject to much disagreement. Definitions for affect, emotion, and mood show much confusion and considerable overlap (Owens & Maxmen, 1979). In general, the terms affect and emotion are used interchangeably for responses of relatively short duration, whereas mood is viewed as "disposition persisting over time" (Owens & Maxmen, 1979). Definitions of affect do emphasize its multiphasic components, such as

> a) the production of a specific constellation of internal physiological and/or cognitive changes in the organism; b) some concomitant of these changes in overt, surface expression in the individual; c) the individual's perception of this pattern of changes; and d) the individual's personal experience or interpretation of the perceived changes. (Lewis & Rosenblum, 1978, p. 4)

Beyond the issue of agreement on definition, a number of developmental psychologists have raised the question as to the usefulness of the term affect itself. Thus, Kagan (1978) takes the position that

> since the category affect is so broad, it may have outlived its usefulness. Changes in feeling state are such a basic quality of human existence, as are interpretation, storage, and manipulation of information, that it is likely that the use of one term to cover the entire domain distorts nature's plan. (p. 33)

Kagan also points to

> a similarity in the theoretical status of the concepts of affect and intelligence. In the same spirit in which some psychologists reject the usefulness of a concept of intelligence because it is not representative of any unitary process, we suggest that the concept of emotion may be without much utility. . . . The term *emotion*, like the concept *weather*, must be analyzed if it is to have any meaning. (p. 38)

This analysis, Kagan suggests, should involve a search for "coherences among incentives, changes in state, and cognitive and behavioral reactions" (p. 34). However, he emphasizes that his critical approach does not mean that he considers the phenomena we call emotion as unimportant. "Quite the opposite; these events must be represented in the written propositions that eventually will describe and explain human behavior" (p. 12).

There is much merit in the challenge, posed by Kagan and others (Lindsley, 1957; Duffy, 1962), that current concepts of affect lack explanatory power. Satisfactory and reliable objective methods of study have been conspicuous by their absence.

> An inappropriately small amount of effort is being expended in illuminating the nature of emotional and motivational development. . . . just as thought and cognition were deemed unworthy of investigation by many child psychologists during the 1940's, so emotional and motivational development became unworthy of investigation in the 1960's. (Zigler, 1973, p. 7).

The same terms are applied to specific affects in the child, adolescent, and adult--delight, pleasure, anger, annoyance, fear, and so forth--even though they must differ significantly at different developmental levels. Emotional labeling is also typically global, and individuals are categorized as "hostile," "anxious," or "happy," emotions that are then assumed to characterize their functioning in all life situations. Yet the same individual who is angry or fearful in one setting may be pleasant or calm in a different setting. In addition, theories and research studies all too often set up a polarized opposition of affect to thought. Yet, every affect has a cognitive component, and every idea is influenced by emotional factors.

> Unfortunately, our tendency has been to separate the affective and cognitive domains from each other. Yet, we cannot separate the two, whether for study, or emphasis, or for instructional purposes. They are so integrally related that it makes no sense to

(NYLS) subjects, includes 136 children who were followed from the first few months of life and who, in 1978, ranged in age from 16 to 22 years. The families are of middle- or upper-middle class background and almost all of the parents were born in the United States.

Four other samples have been studied: (a) 95 Puerto Rican children of working-class parents have been followed from the age of two or three months; (b) 68 markedly premature children have been followed since birth, primarily by Dr. Margaret Hertzig; (c) 52 mildly retarded children, aged five to 11 years, who live at home, have been followed for up to six years; and (d) 243 children aged 11 to 13 years, with congenital rubella, have been followed from the age of two to four years. In recent years, a number of other workers have undertaken studies of temperament, of which most were based on our methodology and categories.

ART is an inferential term, with its specific attributes and manifestations derived from an inductive analysis of objective, descriptive behavioral data. As such, the concept of ART and temperament has no etiological implications. However, the data from a number of recent studies of temperament warrant some tentative statements as to etiology. As detailed in our recent volume, the

> review of the available data suggests an appreciable, but by no means exclusive, genetic role in the determination of temperamental individuality in the young infant. Prenatal or perinatal brain damage does not appear to influence temperament in any striking fashion. The data also indicate that parental attitudes and functioning, as shaped by the sex of the child or special concerns for a premature infant, at the very most have a modest etiological influence on temperament. . . . sociocultural factors appear to have some influence. . . . Special idiosyncratic perinatal characteristics such as chronic anxiety preceding or at least starting in pregnancy may also be significant. (Thomas & Chess, 1977, p. 152)

Thomas and Chess (1977, Ch. 11) cite these tentative conclusions:

> (a) In a study of 53 same-sexed infant twins by Torgersen and Kringlen (1978) in Norway, the intra-pair differences for each temperamental trait in the monozygotic twin group was significantly less than in the dizygotic groups, suggesting a strong genetic influence.

> talk about one independent of the other (Gordon, 1975, p. 11).

However, with all their limitations, the concepts of affect and emotion reflect an extremely significant component of psychological functioning (Izard, 1977). Until substitute categories of greater precision and explanatory power are developed, we will have to continue to use the terms affect and emotion.

This chapter is not concerned with the issues of the overall conceptualization, functional significance, and methods of study of affective states. Rather, the focus is on the phenomenon of the variability in stylistic affective response tendencies from one individual to another. Following the models suggested by Guilford (1959) and Cattell (1950), behavioral phenomena can be divided into the _what_ (specific content and abilities), the _why_ (motivations), and the _how_ (style or temperament) of behavior. According to these models, specific emotional states or traits, such as interest, joy, anxiety, and depression, are one aspect of the _what_ of behavior. Such specific emotions are also influential in shaping motivational patterns, the _why_ of behavior.

Behavioral style, or temperament, the _how_ of behavior, can be defined phenomenologically as the characteristic tempo, rhythmicity, adaptability, energy expenditure, mood, and focus of attention, independent of the content or level of any specific behavior. Thus, a group of children can have the same interest in their school program, the same enjoyment of the acquisition of knowledge, and the same motivation for academic achievement. Yet they may vary significantly in their first reaction to a new curriculum, the speed of their adaptation to a change in the school schedule, the ease with which they can sit quietly and concentrate for long stretches, and the quality of their distractibility and persistence. This identification of the stylistic or temperamental aspect of affect--the Affective Response Tendency (ART)--is essential for the determination of when and how it influences psychological development. But an individual's ART does not exist in isolation from affective traits as such, or from motivational patterns. As will be detailed below, all three aspects of affect are always involved in a continuous interactive process, as they also simultaneously interact with other attributes such as cognition and perception, and with the complex of environmental influences. The final behavioral outcome and pattern of psychological functioning at any developmental stage will at all times reflect this mutually influential interactive process (or transaction, the term preferred by some).

The major long-term systematic studies of temperament have been those conducted since 1956 by Chess, Thomas, and their colleagues. The first and most intensively studied group, the New York Longitudinal Study

(b) In our own NYLS, two infants of one monozygotic twin pair were adopted at birth into separate families who had no contact with each other. Both children showed strikingly similar temperamental traits, suggesting a genetic influence.

(c) In a separate study of temperament, Buss and Plomin (1975) conclude that "there is good evidence that activity, emotionality and sociability have a genetic component; the evidence for the inheritance of impulsivity is equivocal" (p. 230).

(d) Carey, Lipton, and Meyers (1974) studied the effect of pregnancy anxiety in a sample of infants separated from their mothers at birth and placed with an adoptive or foster mother. Comparisons were also made with a control sample of 200 infants living with their biological parents. There was a very modest relationship of pregnancy anxiety to temperament which approached statistical significance.

(e) Sameroff and Kelly (Note 1) studied 300 infants whose mothers had been evaluated psychiatrically during pregnancy. The Carey questionnaire was used to obtain temperament ratings on the infants. The infants of mothers who were judged to be emotionally disturbed during pregnancy were significantly less adaptable, more intense and more negative in mood in their temperament ratings than were the infants of mothers evaluated as having no psychiatric disorder during pregnancy.

(f) In the study by Torgersen and Kringlen (1978), temperamental characteristics in early infancy were also compared with prematurity and pregnancy and birth complications. Only scattered and essentially insignificant correlations were found.

(g) A longitudinal study of prematurely born children with a high incidence of neurological impairment due to pre- and/or perinatal brain damage (Hertzig, 1974) compared the distribution of temperament scores with those of our full-term neurologically intact sample. No significant differences were found.

(h) Temperament scores in our NYLS were compared with those obtained in a sample of 52 children with mental retardation (Chess & Hassibi, 1970) and of 243 children with congenital rubella (Chess, Korn, & Fernandez, 1971). No significant differences were obtained.

(i) Sameroff (Note 2) studied four groups of 26 mothers, each having a diagnosis of schizophrenia, neurotic depression, personality disorder, or no disorder. Prenatal scores on maternal anxiety and attitude to pregnancy were also available. At four months of age, each child's temperamental rating--difficult versus easy child--was obtained through the Carey questionnaire. Significant correlations were found between difficult temperament in the infant and prenatal maternal anxiety, poor attitude toward pregnancy, black race, and low socioeconomic status. Regression analysis showed that, of all the variables, the mother's prenatal anxiety score had the highest correlation with difficult temperament in the infant.

(j) Indirect evidence about the influence on temperament of parental attitudes and practices in early infancy can be obtained by comparisons between boys and girls and among infants of markedly different sociocultural background. It can be expected that parental attitudes and practices will be influenced by the sex of the child and by sociocultural standards. Only modest differences in temperamental scores for boys and girls in the major NYLS were found for the first five years of life. Differences between the NYLS group and the working-class Puerto Rican sample were also not dramatic (Thomas & Chess, 1977).

Our hypothesis is that temperament, ART, and cognitive response tendency--all overlapping and interrelated categories--reflect patterns of neurophysiological and/or neurochemical organization. These patterns represent the characteristic modes of response of the human brain to environmental stimuli, demands, and expectations. The fact that a wide range of variation in individual response styles exists may very well have evolutionary adaptive significance. Each individual's affective and cognitive response style will be optimal for one particular constellation of environmental demands and less so for other environmental constellations.

In the community as a whole, therefore, there will be individuals who can respond effectively, no matter what the specific environmental stimuli and demands may be.

The existence of a wide range of variability in individual response styles can have adaptive value for the group, whatever the difficulty it may pose for specific individual members of the group. It is of interest that Bryan Clarke (1975), the biologist, in a review of the evidence for biological diversity in living species, concluded that

> most natural populations of plants and animals are genetically heterogeneous. Moreover, there is strong evidence that the diversity of forms exists because natural selection favors it, that is, because the variants themselves affect the survival and reproduction of the individuals carrying them. (p. 60)

Clarke then generalized that "a genetically diverse population can better exploit its environment" (p. 60), and that the observed genetic polymorphism in humans should lead us to "ask for polymorphism in our institutions to match the polymorphism in ourselves" (p. 60).

Description of the Nature of ART

Nine characteristics of temperamental individuality were defined in the NYLS by a content analysis of the behavioral protocols for the infancy period of the first 22 children studied. These behavioral data were obtained through parent interviews conducted at three-month intervals in the first 18 months of life, then at intervals of six months until five years of age, then yearly until seven to eight years, and at less frequent intervals thereafter.

For the early childhood period, as a primary source of data we utilized detailed parental reports of the child's behavior during daily routines and in special circumstances. This was required because of the need for information on the young child's behavior in many situations of daily living as well as on the sequence of behavioral responses to new situations over hours and even days. To duplicate such data by direct observational methods would literally require an observer to live in each family's home for long periods of time. At older age levels, as the child's functioning outside the home increased, it became possible to use other methods of data gathering and other sources of information in addition to the parents.

To insure accuracy and completeness in the parents' reports, emphasis was put on descriptions of events and behaviors that occurred close in time to the interview. Moreover, the interview protocols asked for descriptions of concrete, objective behaviors rather than judgments of complex motives and other subjective states, in order to minimize parental distortions and defensiveness. At later stages of the study, similar descriptions were requested from teachers or other informants who were interviewed, from staff members who made direct observations in school situations, and during standard psychological testing procedures. The validity of parental reports obtained in this manner was confirmed by comparison with the description of the child's behavior done by two trained observers in the home in 18 cases (Thomas, Birch, Chess, Hertzig, & Korn, 1963). The accuracy of parental descriptive and objective reports of their infants' behavior has been confirmed in other research studies (Costello, 1975; Dunn, Note 3).

The ubiquity of the nine characteristics of temperament with significant individual variability in the expression of each category has been determined for all the children of the NYLS at different age-periods; for the participants in our other research samples; and in a large number of studies by other workers in this country and abroad.

The affective component of the specific temperamental traits, i.e., the Affective Response Tendency (ART), can be classified as follows:

1. Temperamental characteristics that are directly and specifically affective in character;

2. Temperamental characeristics that are not affective as such, but do influence affect directly; and

3. Temperamental characteristics that are not included in 1 or 2 above, but that influence ART in some circumstances.

Each temperamental category has been scored on a 3-point scale--high, medium or variable, and low. Recent work with questionnaire development has used a 7-point scale (see later section on differentiations). The specific temperamental characteristics listed above, and their definitions, are described below.

Direct Affective Categories

Approach or withdrawal: the nature of the initial response to a new stimulus, new situation, or new person. Approach responses are positive, displayed by emotional expression and/or motor activity. Withdrawal responses are negative, displayed by emotional expression and/or motor activity.

Quality of mood: the amount of pleasant, joyful, and friendly behavior, as contrasted with unpleasant, crying, and unfriendly behavior, and irrespective of the intensity of expression.

Intensity of reaction: the energy level of affective response, irrespective of its quality or direction.

Categories That Influence Affect Directly

Activity level: the amount and level of the motor component in a child's functioning. The degree of liveliness of movement influences the child-environment in many ways that have emotional components (degree and kind of reaction from other people, nature of involvement with pleasurable activities, and so forth).

Adaptability: the ease with which behavior is modified in desired directions. Ease of adaptability leads to positive mood responses to many situations with initial negative moods.

Sensory threshold: the intensity level of stimulation necessary to evoke a discernable response, irrespective of the specific form that the response may take, or the sensory modality affected. The response to the stimulus, once evoked, often has a definite affective component.

Categories That Influence Affect Indirectly

Distractibility: the effectiveness of extraneous environmental stimuli in interfering with or in altering the direction of the ongoing behavior. Such changes in behavior or the response of others to such changes may influence affect directly or indirectly.

Attention span and persistence: two related categories. Attention span concerns the length of time a particular activity is pursued. Persistence refers to the continuation of an activity in the face of obstacles to the maintenance of the activity direction.

The persistent child with long attention span who succeeds in a difficult activity will have a positive affective response. Interference with such persistent activity may cause intense affective reactions of frustration. Opposite reactions will be true, in general, of the child with low persistence and short attention span.

The ninth temperamental trait--degree of rhythmicity of biological functions (sleep-wake cycle, hunger periodicity, regularity of bowel elimination)--does not show a clear relationship to affect. Rhythmicity might be conceptualized as the expression of ease of habituation, which could be related to ease in the development of a consistent pattern of emotional response. The available data are insufficient to test this hypothesis.

Three temperamental constellations of functional significance have been defined in normal children by qualitative analysis of the data and by factor analytic techniques. All three have significant ART components.

The Easy Child - characterized by rhythmicity (regularity) of biological functions, positive approach to new stimuli, high adaptability to change, and mild or moderately intense mood that is predominantly positive. These constitute approximately 40% of the NYLS sample.

The Difficult Child - characterized by arhythmicity (irregularity) of biological functions, negative withdrawal responses to new stimuli, slow adaptability to change. These constitute approximately 10% of the NYLS sample.

The Slow-To-Warm-Up Child - characterized by negative responses of mild intensity to new stimuli with slow adaptability. These constitute approximately 15% of the NYLS sample.

As can be seen from the above percentages, not all children fit into one of these three temperamental groups. This results from the varying and different combinations of temperamental traits that are manifested by individual children. Also, among children who do fit one of these three patterns, there is a wide range in degree of manifestation. Some are extremely easy children in all situations; others are relatively so or not always so. A few children are extremely difficult with all new situations and demands; others show only some of these characteristics and relatively mildly. For some children it is highly predictable that they will warm up slowly in any new situation; others warm up slowly with certain types of new stimuli or demands, but warm up quickly in others.

The various temperamental constellations all represent variations within normal limits. Any child may be easy, difficult, or slow-to-warm-up temperamentally, have a high or low activity level, high distractibility and low persistence or the opposite, or any other relatively extreme rating score in a sample of children for a specific temperamental attribute. However, such an amodal rating is not a criterion of psychopathology, but rather an indication of the wide range of behavioral styles exhibited by normal children.

History of Conceptualization of the Category

The concept of temperament and ART must be clearly and carefully distinguished from earlier theories of static, fixed constitutional typologies. In these latter formulations--prevalent not only in previous centuries but well into the 1900's in a more sophisticated form (Sheldon & Stevens, 1942)--psychological development was conceived as the mere unfolding and elaboration of fixed characteristics already present in the new-born infant. The infant was viewed as a homunculus, containing the attributes of the adult in miniature, and the developmental process essentially achieved the evolution of these characteristics to adult size and maturity. Psychological growth was a qualitative predetermined process, not one of qualitative change dependent on the continuously evolving interaction of organism and environment. Thus, all kinds of normal personality attributes, as well as complex patterns of deviant behavior, such as criminality, psychopathology, and psychoses, were considered as already present in the new-born infant and only required quantitative growth to become evident. This constitutionalist thesis was expressed in popular folklore by such labels as "the bad seed," and in presumably more sophisticated professional circles by such terms as "criminality," "constitutional psychopath," "constitutional inferior," and "psychoneurotic diathesis."

Gradually, the mechanical constitutionalist views lost favor, largely through the findings of Freud and Pavlov on the importance of environmental influences in producing individual differences in both normal and deviant psychological development. There were, however, scattered comments and reports suggesting that individuality in emotional and social patterning might be related to intrinsic responsive tendencies. Thus, Freud (1937/1964) asserted that "each ego is endowed from the first with individual dispositions and trends" (p. 240). Pioneer workers in child development, such as Gesell and Ames (1937) and Shirley (1931, 1933), have reported significant behavioral differences in samples of young infants. However, neither these workers nor their followers pursued any systematic studies of the significance such characteristics might have on the developmental course of individual children.

From the 1920's to the 1950's a number of studies did appear that reported findings of individual differences in infants and young children in specific, discrete areas of functioning. These included motility (Fries & Woolf, 1953), perceptual responses (Bergman & Escalona, 1949), sleeping and feeding patterns (Escalona, 1953), drive endowment (Alpert, Neubauer, & Weil, 1956), quality and intensity of emotional tone (Meili, 1959), social responsiveness (Gesell & Ames, 1937), autonomic response patterns (Bridger & Reiser, 1959; Grossman & Greenberg, 1957; Richmond & Lustman, 1955), biochemical individuality (Mirsky, 1953; Williams, 1956), and electroencephalographic patterns (Walter, 1953). There were no long-term studies of the influence of these early life characteristics and the course of psychological development. With a different research orientation, Pavlov and his students (1927) classified different nervous systems according to the balance between excitation and inhibition, and attempted to explain features of both normal and abnormal behavior states on this basis. However, these explanations were speculative and lacked human and clinical confirmatory data.

These early studies did call attention to the phenomenon of individuality in the response tendencies of even very young infants, tendencies that appeared primarily inborn rather than determined by postnatal environmental influences. In contrast to earlier constitutionalist formulations, these inherent organismic tendencies were viewed as factors influencing the child's response to the environment and not as anlages of specific psychological patterns. However, the individual studies tended to be narrow in focus, fragmented in their consideration of the dynamics of psychological development, and lacking in the long-term longitudinal follow-up necessary to establish the functional significance of the specific response tendency attributes under study. Furthermore, systematic research into such inborn organismic characteristics would have had to battle environmentalist ideology, which had become dominant by the 1940's and 1950's and which asserted a one-to-one correlation between behavioral individuality and environmental factors.

The predominant position established by the exclusively environmentalist view of psychological development can be attributed in the main to two currents: (a) a rejection of the static, mechanistic beliefs of past centuries that conceived development as the mere unfolding and elaboration of fixed characteristics already present in the new-born infant, and (b) the progressive accumulation of research and clinical data indicating that the child's environment--his condition of life, relationships with parents and other family members, and the extrafamilial sociocultural setting--has a profound influence in shaping physical and psychological development. With regard to the second point, the psychoanalytic movement was especially influential. Freudian theory centers on the concept of a fixed and predetermined evolution of a hypothetical instinctual drive for pleasure, the libido. Individual variation in the progressive movement of the young child from one libidinal stage to another, however, is conceptualized as primarily caused by the influence of parental and sibling relationships to the child. In essence, this represents an environmentalist view, which has been reinforced by the neo-Freudian cultural psychoanalytic group, with its emphasis on the importance of social and cultural as well as intrafamilial influences.

Psychoanalytic theory was also primarily concerned with the motivational aspects of behavior, even though it was presented as a general theory.

(The recent psychoanalytic formulations of autonomous ego functions represent, in a sense, a belated recognition of this deficiency in the theory.) With a motivational bias, the behavioral manifestations of temperament as response tendency can be reinterpreted and redefined. The child with slow adaptation to any new situation becomes an anxious, insecure youngster with defensive withdrawal. The slowly moving, mildly expressive school child is labeled as having inferior intelligence. Temperamental characteristics that are inconvenient to the parent or teacher or deviant from the average are interpreted by them--and by the professional mental health worker--as the result of undesirable intrapsychic motivations in the child. The behavior is, in effect, made to fit a Procrustean bed of motivations.

When the NYLS was launched in 1956 as the first systematic and comprehensive study of temperament and its functional significance for psychological development, there were impressionist convictions prevalent among mothers, baby nurses, and pediatricians, that infants were behaviorally different even at birth. Fragmented, limited studies had been reported in the professional literature. But no body of knowledge existed as to the range of such differences, the criteria for categorizing individual temperamental traits, the methods for obtaining data and rating such characteristics, or the role played by specific environmental traits. And the assumption prevalent among most research workers and clinicians that the roots of individuality lay in environmental differences created a climate most discouraging to the exploration of organismically determined individual differences.

Propositional Inventory

Increasingly in recent years, the one-sided environmentalist view of a generation ago has been recognized as an inadequate conceptual framework for understanding normal and deviant psychological development. This trend in no way reflects a belittlement of the profoundly significant role of environmental influences--parents, other family members, peer groups, school, social values, cultural norms, and so forth. In fact, recent research studies have demonstrated the ubiquity and complexity of such environmental influences to an extent not appreciated 30 years ago. However, there has also been an impressive documentation of the inadequacy of explanations of individuality in psychological development based on environmental factors alone (Beiser, 1964; Schaffer & Emerson, 1964; Thomas & Chess, 1977). The idea that early experience is all-important for subsequent development--a formulation buttressed by psychoanalytic theory, early studies of maternal deprivation, and the ethological concepts of "imprinting" and "critical periods"--has also been increasingly challenged (Kagan & Klein, 1973; Sameroff, 1975; Schaffer, 1977). Rather, it would appear that early learning in itself, is of no more consequence than learning at any other stage of development, and that repeated reinforcement through subsequent age-periods is required for such early experience to result in long-term effects (A. B. D. Clarke, 1968).

Concurrent with this increasing challenge to unidimensional environmentalist views has been a growing appreciation of the active role played by the child, from birth onward, in influencing the dynamics of the child-environment interactional process. The studies of temperament have, of course, emphasized this issue. In addition, other recent research on the infancy period has dramatically documented the active participation of the infant, even in the new-born state, in the dynamic of child-environment interaction. The young baby's perceptual, behavioral, and cognitive capacities are developed to an extent not imagined by students of development even ten years ago (Kagan, 1971; Bower, 1974). The new-born infant not only responds actively to stimulation from the mother but initiates communication with vocalizations, facial expressions, and body movements. Rutter (1975) summarizes this research:

> First, it is evident that, although limited in many ways, the young infant has a surprisingly sophisticated response to his environment and quite substantial learning skills. Second, these skills and capacities have a marked influence on the process of parent-child interaction. In many instances, it is the baby who shows initiative and the parent who responds by following. Third, even in the early months of life there are striking temperamental differences between infants which influence both their responses to the environment and also how other people react to them. (p. 208)

Along the same line, the Clarkes, in their recent extensive review of the literature on early experience and its significance (A. M. Clarke & A. B. D. Clarke, 1976) conclude that although

> there is at the present time no clearly formulated model of child development, nor, as we see it, has empirical research advanced sufficiently to build one, there is a growing consensus that ultimately such a model must take account of discontinuities as well as continuities, the child as an active agent in social transactions, and the potentiality for modification of behavior patterns within the limits set by constitutional factors. (p. 269)

The current climate in developmental theory and research stands in dramatic contrast to the dominant ideas and formulations of 20 to 30 years ago. With this change has come a burgeoning of temperament research in a number of centers in this country and abroad. Most of the studies have utilized the categories and criteria of the NYLS. The major reports published thus far are discussed in the various sections of this chapter. A number of other studies are currently in progress, including a detailed follow-up of the NYLS sample. One of the studies in progress is of special interest, since it includes data on over two thousand children born during one calendar year in Helsinki, Finland (Huttenen, Note 4). A major focus of this project is the determination of correlations between prenatal events and temperament in the infancy period.

An independent study of temperament was recently reported by Buss and Plomin (1975). They defined four categories of temperament--activity, emotionality, sociability, and impulsivity--through the use of a 20-item questionnaire, five items for each category. Their questionnaire was given to the mothers of 138 pairs of same-sexed twins, who rated both twins. The average age of the twins was 55 months, and their age range was one to nine years. The families were predominantly of white middle-class background. Comparison of the intrapair difference between the mono- and dizygotic twin pairs (81 versus 57 pairs) led the authors to conclude that "There is good evidence that activity, emotionality, and sociability have a genetic component; the evidence for the inheritance of impulsivity is equivocal" (p. 230).

Buss and Plomin's (1975) categories of activity, emotionality, and sociability appear to be contained within the NYLS traits of activity level, intensity and quality of mood, and approach-withdrawal and adaptability. The category of impulsivity appears unrelated specifically to any of our nine categories. More recently Rowe and Plomin (1977) constructed a new factor analytic scale of representative items from both the NYLS protocols and the Buss and Plomin scale for the early childhood years. Six factors emerged: sociabiliy, emotionality, activity, attention span-persistence, reaction to food, and soothability. The Colorado Childhood Temperament Inventory, a questionnaire based on these factors, gives promise of being a useful instrument for temperament studies.

Graham, Rutter, and George (1973), in a study of British children three to eight years of age, confirmed a number of the NYLS findings on temperament and added another characteristic, which they labeled "fastidiousness." The identification of this trait in additional samples and the exploration of its functional significance remain to be done. Garside and his coworkers (Garside, Birch, Scott, Chambers, Kolvin, Tweddle, & Barker, 1975) developed a 39-item temperamental inventory based on the approach of the NYLS and that of Graham and his associates.

The inventory was used to gather temperament data on 209 school children. Factor analysis yielded four meaningful components: (a) Withdrawal, poor adaptation, dependence; (b) High activity, intensity, distractibility; (c) Moodiness, sulkiness; and (d) Irregularity. Tentative norms have been established for these dimensions.

It can be expected that future investigators will identify additional categories and constellations of Affective Response Tendency. It is possible that refinement of data gathering and data analysis methods may also lead to modifications in the definitions and criteria of the presently established categories and constellations.

Differentiations, Boundaries, and Limits

As indicated earlier, ART or temperament reflects the style or the *how* of behavior, and not the content and abilities or the *what*, nor the motivations or the *why* of behavior. As such, temperament is only one attribute, albeit an important one, of the organism. Temperament must always be considered in the context of its internal relations with abilities and motives, and in the context of its external relations with environmental opportunities and stresses. The interactive process produces certain consequences in behavior which then interact with recurrent and new features of the environment to reinforce certain previous patterns, or to attenuate some, or to produce new behavioral characteristics, or some combination of the above. As Sameroff (who prefers the term *transactional* to *interactional*) stated:

> Any truly transactional model must stress the plastic character of both the environment and the organism as it actively participates in its own growth. In this model the child's behavior is more than a simple reaction to his environment. Instead, he is actively engaged in attempts to organize and structure his world. The child is in a perpetual state of active re-organization and cannot properly be regarded as maintaining inborn characteristics as static qualities. In this view, the constants in development are not some set of traits but rather the processes by which these traits are maintained in the transactions between organism and environment. (1975, p. 281)

In line with the above formulation, *temperament* must clearly be distinguished from *personality*. To use Allport's (1961) definition, "Personality is the dynamic organization within the individual of those psychophysical systems that determine his characteristic behavior and thought (p. 28). According to Sameroff (1975), personality is determined not by "some set of traits" (temperament or otherwise) but by "the processes by which these traits are maintained in the transactions between organism and environment" (p. 281).

This distinction between temperament and personality is dramatically evident in our current follow-up of the NYLS subjects who are now 20 to 22 years of age. A quantitative analysis of consistencies and changes in temperament from childhood to early adulthood will be undertaken when this follow-up study is completed. It is now clear from qualitative evaluation of the longitudinal data, that at least some of the participants who showed the Difficult Child pattern in childhood continue in early adult life to be intensely expressive, with relatively greater negative mood, and to react to many new situations with initial withdrawal followed by slow adaptability. Yet these same participants show remarkable differences in their personality characteristics, reflecting differences in the interactive process with environmental influences and life experiences over time. And the same diversity is apparent in at least some of those participants who had been Easy or Slow-To-Warm-Up Children. The relationship between Affective Response Tendency and Cognitive Response Tendency merits some discussion, and will be considered later in this chapter.

Finally, it should be emphasized that the definitions and ratings of temperamental traits are for the normal range of behavior and not for pathological phenomena. Certain abnormal personality characteristics may evolve out of specific temperamental traits: the highly active child may become hyperactive; the persistent child may become rigid; the highly intense child may become impulsive; and the slowly adaptive child may become negativistic. But such pathological change does not reflect a more extreme manifestation of temperament. Rather, such change requires an excessively stressful child-environment interaction, in which the pathological characteristic is no longer the expression of temperament per se. In fact, hyperactivity may develop in a child who was not persistent, impulsivity in a child who was not highly intense, and negativism in a child who was not slowly adaptive. Temperament contributes to both normal and deviant personality development, but it is not identical with personality any more than are motivational patterns or abilities.

Functional Characteristics of the Category

As indicated earlier, ART--or temperament--as such and by itself does not determine personality structure, learning capacity and achievement, or psychopathology. Temperament enters as a significant variable in sequential organism-environment interactions, from which personality, learning, and psychopathology evolve. The child's temperament influences the behavioral attitudes of peers, older children, parents, and teachers. Conversely, the effect of these individuals' behaviors and attitudes on the child is markedly influenced by his or her temperament. Furthermore, temperament, motivations, cognitive attributes, and special abilities or handicaps enter into a reciprocal interaction process with environmental influences that shape the child's development and functioning at each age level and determine the ontogenesis and course of behavior disorders.

In the analysis of the child-environment interactive process in our longitudinal samples, we have found the evolutionary concept of "goodness of fit" (Henderson, 1913) and the related ideas of consonance and dissonance to be very useful. Goodness of fit results when the properties of the environment, its expectations and demands, are in accord with the organism's own capacities, characteristics, and style of behaving. When this consonance between organism and environment is present, optimal development in a progressive direction is possible. Conversely, poorness of fit involves discrepancies and dissonances between environmental opportunities and demands and the capacities and characteristics of the organism, so that distorted development and maladaptive functioning occur. Goodness of fit is never an abstraction, but is always assessed in terms of the values and demands of a given culture or socioeconomic group.

This concept of goodness of fit is similar to that employed by Kagan (1971) in studying perceptual schemata in infants and their interactions with new environmental stimuli. He emphasized that excessive stress and distress will depend on discrepancy from an established schema and not from the novelty or change in stimulation as such.

> The emphasis is placed on the relation between his schemata and the events in the new environment, not on the absolute variability or intensity of the new situation. . . . If disruption is seen as a product of lack of congruence between schema and environment, one examines the distinctive qualities of the environment. (p. 11)

It should be stated that goodness of fit does not imply an absence of stress and conflict. Quite the contrary. Stress and conflict are inevitable concomitants of the developmental process, in which new expectations and demands for change and progressively higher levels of functioning occur continuously as the child grows. Such demands, stresses, and conflicts, when consonant with the child's developmental potentials and capacities for mastery, may be constructive in their consequences and should not be considered as an inevitable cause of behavioral disturbances.

The issue involved in disturbed behavioral functioning is rather one of excessive stress resulting from poorness of fit and dissonance between environmental expectations and demands and the capacities of the child at a particular level of development.

The concept of goodness of fit, therefore, should not be used as a homeostatic principle in the area of behavioral functioning, but as a homeodynamic one, which has as its end result developmental change and expanded competence rather than the maintenance of an equilibrium.

The specific findings of the functional significance of temperament, both from our own studies and those of other investigators, are detailed in the volumes Temperament and Behavior Disorders in Children (Thomas, Chess, & Birch, 1968) and Temperament and Development (Thomas & Chess, 1977).

In childhood (ages two to 11 years), the Difficult Child temperament group were the most vulnerable to the development of behavior disorders. In the NYLS sample, 70% of these children showed clinically significant behavior problems (in most cases, a mild reactive behavior disorder), and only 30% did not. This is not surprising, since these children's characteristics--biological irregularity, frequent withdrawal reactions to the new with slow adaptability, and frequent intense negative mood expressions--made their adaptation to the many sequential demands for socialization stressful indeed. And when, as was frequently the case, the parents and/or other caretakers responded with anxiety, impatience, intimidation, or guilt to the child's tendency, the parent-child interaction quickly became excessively stressful. On the other hand, when parents responded to the child with relaxed patience, consistency, and acceptance, the stress of socialization did not become excessive and development proceeded normally.

The vulnerability of the Difficult Child to behavior disorder development has been confirmed in a number of other studies. In our own handicapped populations--the mild mental retardation sample and the congenital rubella group--the children with the difficult temperament pattern were at even greater risk in terms of behavior disorder development than were the nonhandicapped children in the NYLS (Thomas & Chess, 1977). Graham, Rutter, and George (1973), in their study of 60 British children, each of whom had at least one mentally ill parent, found that the difficult temperament characteristics were predictive of the development of later psychiatric disorder. In a study of 13 babies with colic, Carey (1972) found a significantly higher incidence of the Difficult Child temperament.

The easy children, with contrasting temperament to the difficult children, usually adapted to the demands for socialization with little or no stress and confronted their parents with few, if any, problems in routine handling. These children, as a group, developed fewer behavior problems in proportion to their representation in the total NYLS sample. However, under certain circumstances, their easy adaptability to parental standards and expectations at home led to the development of a behavior disorder. This occurred when the demands of the extrafamilial environment, such as a peer group or school, conflicted sharply with the behavior patterns learned at home. In some cases, when such conflict was especially severe, the child was unable to make an adaptation to reconcile this double standard.

For the Slow-To-Warm-Up Child, the excessively stressful situation was typically one in which rigid demands were made for quickness of adaptation to a new situation. For the high activity child, difficulties occurred when there was insufficient space or flexibility of schedules and rules in home or school to allow him sufficient constructive motor activity. The persistent child had no special difficulty with new situations but developed frustration responses if involvement in an ongoing activity was prematurely and abruptly interrupted. The distractible and nonpersistent child was put under excessive stress if expected to concentrate and work without interruption for periods of time beyond his or her capacities.

Any of the other temperamental characteristics can also enter as a significant variable in the genesis of a behavior disorder. Thus, Carey (1974), in an unselected sample of 60 infants six months of age, found a significant correlation between night waking and low sensory threshold. It can be expected that as studies on temperament continue to develop at various centers, additional significant correlations with specific types of behavioral deviations will be identified.

It should be emphasized that there are many exceptions to the generalizations about the kind of environmental situations and demands that are typically dissonant with specific temperamental patterns, although such generalizations have heuristic value in planning research strategies and are useful clinically as leads to the analysis of a behavior problem case. However, all kinds of permutations and combinations occur in real life and the research worker, parent, teacher, or clinician must expect that in any individual child the dynamics of the child-environmental interactional process may or may not conform to broad generalizations and group trends.

Finally, our findings and those of others on the importance of temperament in the developmental process do not imply that temperament is always a significant variable in the ontogenesis and course of every behavior disorder. In some instances, temperament may play a crucial role, in others it may be somewhat influential, and in still others, it may play a minor or insignificant role. In this regard, temperament is no different from any other single organismic or environmental factor. Whether it be the level or style of cognitive functioning, the goals and aims of the child, the characteristics of the mother, or the nature of the school situation, the significance of these factors for the developmental process in an individual child cannot be decided a priori, but must be determined on the basis of all the concrete information available in that specific case.

Mutability of the Phenomena Represented by the Category

In our own studies of temperament, we were at first struck by the instances in which temperamental consistency was evident from infancy to later childhood and adolescence. In retrospect, we did perhaps give a one-sided importance to the possibility of consistency over time. However, as we have emphasized in recent writings (Thomas & Chess, 1977), such a formulation would be completely at variance with our fundamental commitment to an interactionist viewpoint, in which individual behavior development is conceived as a constantly evolving and changing process of organism-environmental interaction. All other psychological phenomena, such as intellectual competence, coping mechanisms, adaptive patterns, and value systems, can and do change over time. How could it be otherwise for temperament? Perhaps the continuity that is so frequently observed results not from consistency in the psychological attribute per se, but from consistency in the environment-organism interaction. Bloom (1964) stated that intelligence loses its plasticity after about four years of age. However, he made the following point: "Our research suggests that although the environment may have its greatest effect on individuals in the first year or so that they are within it, its effect is stabilized and reinforced only when the environment is relatively constant over a period of time" (p. 27).

Thus, it is no surprise that our quantitative analysis of interyear correlations for each of the nine categories for years one to five in the NYLS sample do not reveal impressive consistency patterns. Significant correlations are found from one year to the next, but as the time span for the comparison is increased, from one year to two, three, or four years, the number of significant correlations decreases. These are trends for the group as a whole, however, and conceal patterns of consistency over time for individual children. (The reader is referred to the Thomas and Chess volume, Temperament and Development, 1977, p. 161, for the statistical table detailing these correlations.) Methodological problems, which have been detailed by Rutter (1970), undoubtedly influence these quantitative findings. The problems identified include reliance on adjectives parents use in describing their children's behavior, the possibility of selective bias in determining which episodes of behavior the parent or other observer reports, the problem of separating the content from the style, and, perhaps most important of all, the effect that the changing context of the child's behavior might have on the behavioral ratings.

A number of qualitative analyses of the longitudinal data have also been completed that have made it possible to trace the consistency of temperamental characteristics in individual children over time. In general, five patterns can be defined: (a) clear-cut consistency; (b) consistency in some aspects of temperament at one period and in other aspects at other times; (c) distortion of the expression of temperament by other factors, such as psychodynamic patterns; (d) consistency in temperament but qualitative change in temperament-environment interaction; and (e) change in a conspicuous temperamental trait. An individual child may show a combination of several of these five possibilities, i.e., consistency over time with one or several temperamental traits, distortion in several others, and change in another.

We are presently engaged in a follow-up of the NYLS sample at ages 19 to 22 years. The follow-up includes an assessment of temperament at this stage of early adulthood. Comparisons of these temperament ratings with those for the earlier childhood periods should further clarify the types and dynamics of temperamental continuity and change over time. The analysis should be completed in the next two years.

Functional Relationships of ART to Other Categories

Sex Differences

Differences in temperamental scores for boys and girls were examined within the NYLS sample for each of the first five years of life. In the 45 comparisons made--nine categories for each year--significant differences beyond the .05 level of confidence were found only once for activity level, twice for adaptability, three times for threshold, once for distractability, once for persistence, and not at all for the other four categories. The significant differences were also scattered over the five years. Sameroff and Kelly (Note 1) determined the temperamental characteristics of 220 four-month-old infants, using the Carey questionnaire. No significant sex differences were found.

Ethnicity, Social, and Economic Status

In the same study, Sameroff and Kelly (Note 1) also made comparisons on the basis of socioeconomic status (SES) and race. The major differences found were in the threshold and intensity categories. The lower the SES, the more likely that the child would be rated as having high intensity and low threshold. For the approach category, both the high and low SES infants were rated as being more approaching than the middle SES group. In the racial comparison, black infants were rated as more difficult on four of the five variables contributing to difficult temperament. They were significantly less regular, less approaching, less adaptable, and with more negative mood than the white infants.

Differences in both ethnicity and socioeconomic status were studied in comparisons between the NYLS and Puerto Rican working class (PRWC) groups at two to three months of age. There were markedly significant differences for rhythmicity and intensity, borderline significant differences for activity level, mood, and threshold, and no significant differences for the other four categories. Overall, the differences were not dramatic.

Of greater interest was the comparison of these two groups, the NYLS and PRWC samples, with regard to differences in temperament-environment interaction. Of the 42 children in the NYLS sample with behavior problems, only one presented excessive motor activity as a symptom, whereas eight of the 15 PRWC children with problem behavior presented this symptom. Our judgment is that most of the "hyperactivity" displayed by the latter group was due to the circumstances of their environment. The families lived in small apartments and the children were likely to be cooped up at home because of a realistic fear of accidents in the streets of East Harlem. For the temperamentally high-active children, this represented severely excessive stress. By contrast, the children in the NYLS group with similar temperament usually lived in spacious apartments or suburban homes, with adequate safe play space at home and in the neighborhood.

Cognitive Response Tendency

To date, research studies of cognitive style and temperament have proceeded independently of each other. This is not surprising, in view of the complex methodology and conceptualization problems in identifying and rating individuality in cognition and behavior. However, review of the definitions of nine cognitive styles that have been identified (Kogan, 1971, p. 246) strongly suggests the possibility of a number of relationships with ART. Thus, field independence vs. dependence may be influenced by distractibility, scanning by attention-span and distractibility, reflectiveness vs. impulsivity by emotional intensity, constricted vs. flexible control by distractibility, and tolerance for incongruous or unrealistic experiences by approach/withdrawal and quality of mood. A relationship could also be a reciprocal one, in which various dimensions of temperament are influenced by specific cognitive style attributes. Furthermore, the goodness of fit concept of consonance and dissonance between the child's capacities and environmental demands and expectations should be as pertinent for exploring the significance of Cognitive Response Tendency as for Affective Response Tendency. Such an approach to cognitive style has been suggested by Witkin (1973). Research along the lines suggested by these possibilities would indeed be most desirable.

Other Categories

No data exist on the relationship of ART to motivation and aspiration, or to identity and interests. Some data may be generated in the present follow-up study of the NYLS sample. A working hypothesis is that there are reciprocal interactive relationships between ART and these other categories at any age-period and over time. There are no data or hypotheses as yet concerning the possible relationships of ART to nutritional status or to language and dialect. As indicated earlier, data from our mentally retarded and congenital rubella samples suggest that the handicapped child with the difficult temperament pattern is especially vulnerable to the development of behavior disorders.

An analysis is in progress correlating IQ with temperament from data for three- and six-year-olds in the NYLS sample. The analysis should be completed by mid-1980.

Approaches to the Assessment of ART in the Behavior of Humans

In formulating the research protocols for the NYLS, we were concerned with the identification of categories of temperament by inductive content analysis of behavioral data. We also tried, as much as possible, to use the detailed behavioral data on each child that was obtained from parents, teachers, or observers in different life situations when making the temperament ratings. Finally, we were concerned that the child's behavior should be linked at all times to the environmental context in which it occurred. Consequently, our interview and observational protocols emphasized that data should be gathered from a wide range of daily activities. This assured that judgments of temperament would not rely on single or special situations in which the child's typical behavior style might be distorted by some special influence. Also, data gathering focused on the sequences of interaction between parent or teacher and child. Thus, if a mother reported that her child cried when put to bed at night, the next question would be "What did you do when he/she cried?" Then, "How did he/she react to what you did?" Then, "What did you do then?" and so on until the sequence of interaction was completed.

For quantitative rating, item-scoring and weighted score techniques were developed to maximize the use of all descriptive items of behavior in the behavioral protocols. A 3-point scale was used for each of the nine categories: high, low, and an intermediate position of moderate or variable. Qualitative rating assessments of individual records were also assigned.

However, these assessment methods are laborious and time-consuming. Though they were necessary for the initial study, short, time-saving questionnaires are now feasible, and a number have been developed or are in the process of development. Carey (1973) was the first to formulate such a questionnaire for the infancy period, and it has been widely used at many centers. He has recently revised his scale, expanding the number of items and changing the format from a forced-choice structure to a 6-point response scale.

In the last few years, we have developed parent and teacher questionnaires for the three- to seven-year age periods, using a 7-point scale for each item (Thomas & Chess, 1977). McDevitt and Carey (in press) have independently formulated a parent questionnaire for the same age range and are working on an extension into the middle childhood years. A modified parent interview form for the early school years has been developed by Graham, Rutter, and George (1973), and a questionnaire for the same age period has been developed by Garside and his colleagues (Garside et al., 1975). Persson-Blennow and McNeill (1979), working in Malmo, Sweden, have recently completed a questionnaire for measuring temperament in six-month-old infants. The questionnaire was standardized on 160 subjects.

Assessment of the adolescent and adult temperament by questionnaire is much more complicated because motivations, abilities, and temperament enter into increasingly complex interactional processes, and individual items and patterns reflect the interplay of influences. The problem is further compounded by the increasing individual variations in activities of all kinds that emerge as children grow older. Athletic activities, hobbies and other special interests, social life, school curriculum and schedules, and work experience all become diversified in their form and content, prominence in the individual's life, and their sequence of development. As a result, the standardization of protocols, questionnaires, and scoring criteria for temperament becomes increasingly complex for the older child, the adolescent, and the adult.

We are currently engaged in the development of a psychometrically sound temperament questionnaire for the early adult years. Our estimate is that this project should be completed within the next two years. Another attempt in this direction has been made by Scholom (1975), who used the Thorndike Dimensions of Temperament questionnaire, for which extensive data on reliability and validation are available. He has empirically assumed a correspondence between the scales of the Thorndike questionnaire and the nine temperament categories of the NYLS. This assumption still remains to be validated.

Finally, we have developed a short interview form for obtaining qualitative data and ratings on temperament, which appears to be especially useful in clinical practice (Thomas & Chess, 1977).

As described earlier, independent categorization and questionnaire ratings of temperament have been developed by Buss and Plomin (1975), and a revised questionnaire combining items from the NYLS and from Buss and Plomin has been developed by Rowe and Plomin (1977).

Relevance of ART for Learning and Teaching

The role of temperament in parent-child interaction and on normal and deviant psychological development has been a major focus of our work. However, we have also carried through several specific quantitative studies of the relationship of temperament to school functioning and academic achievement, and have gathered a substantial body of impressionistic qualitative data on the same issue. In presenting these findings, it is pertinent to emphasize again that temperamental characteristics are only sometimes, not always influential in the development of school problems. This caveat is especially important today, when so many school authorities and mental health professionals label all restless, inattentive children as "hyperactive" and "distractible" and recommend drug treatment. The restlessness and inattentiveness may reflect, at least in part, temperamental attributes: but the symptoms often reflect a reaction to poor teaching methods; overcrowded, stuffy classrooms; nutritional or other health problems; the child's preoccupation with family problems and stresses at home; or the presence of a learning disability or psychological problem.

One study (Gordon & Thomas, 1967), using a sample of 93 children in a suburban middle-class kindergarten, asked two highly experienced teachers to rate each pupil in terms of the quick- versus slow-to-warm-up child and to estimate each child's general intellectual level. The latter estimate was compared to the results of psychometric testing done the following year. Analysis of the data indicated that, to a significant degree, the teachers tended to underestimate the intelligence of the slow-to-warm-up children. It is a plausible hypothesis that such a teacher's judgment could easily become a self-fulfilling prophecy.

A quantitative analysis was done of the correlation between the NYLS children's temperamental characteristics at five years of age and their academic achievement scores in reading and arithmetic at various points in their elementary school years. This analysis suffered from a number of methodological problems: the achievement test scores were obtained from different tests; the schools and ages of the children varied; and, since the temperament measures were employed predictively, temporally concurrent relationships could not be obtained. Nevertheless, statistically significant correlations were found between low academic achievement scores and the temperamental traits of nonadaptability and withdrawal, but not for high intensity, negative mood, or arhythmicity. The significant relationships, therefore, appeared to be with the constellation of the Slow-To-Warm-Up Child and not that of the Difficult Child. This finding is in line with the study of Gordon and Thomas (1967). It should be emphasized that both studies were carried out in schools attended by native-born middle- and upper middle-class children, and would not necessarily apply to schools with a high proportion of poverty and minority group students. It may well be that with teachers who are harassed and burdened by the frequently inadequate resources and working conditions in such schools, the Difficult Child may not find the sympathetic and patient approach that the youngsters in the NYLS generally found in their schools. We do not have the data, however, to verify this speculation.

Qualitatively, there have been a large number of instances in which the child's temperament has appeared to be a significant factor in the teacher's overall reaction to the child, in the estimate of the child's intellectual potential, and in shaping the child's pattern of coping and success in coping with the demands of school adaptation and learning. Conclusions drawn from single case studies are subject to numerous caveats, but the large number of such instances in which temperament has appeared relevant to teaching and learning in the NYLS sample cannot be ignored. At the very least, they emphasize the importance of large-scale systematic studies along these lines.

These tentative conclusions from the many separate instances in the NYLS will be summarized briefly. Highly active or distractible children who had difficulty in sitting quietly or following directions could create annoyance in teachers (as in parents). These children were also poor learners in very permissive, unstructured school situations. For the child with low persistence and short attention span, especially if combined with high distractibility, the demand for prolonged concentration usually expected in school becomes excessively stressful. A similar problem developed at home for such a child if the parents insisted that he sit down with his homework and finish it without interruption.

The highly persistent child with a long attention span, on the other hand, often seemed to be "made" for learning. Problems did develop, however, if such a child insisted on continuing an activity and the teacher demanded that he or she shift to the next scheduled activity with the rest of the class.

For several of the slow-to-warm-up children, the initial quiet, slow adaptability to a new curriculum was misjudged by teachers as evidence of inferior intelligence. With other children, similar behavior was interpreted as anxiety.

A low-activity child sometimes became a problem in the school setting. If his or her slowness was conspicuous and the school program was rigidly and tightly scheduled, the child easily became the butt of the teacher's impatience and his or her classmates' ridicule as the class "slowpoke."

Most of the youngsters with the Easy Child temperamental pattern adapted as quickly and smoothly to the demands of formal learning as they had to those of early socialization and peer group activity in the preschool years. In several instances, however, this was not the case. One child had adapted easily and with pleasure to her parents' encouragement of self-expression and spontaneity and a sense of individuality and uniqueness. In the school setting, however, the child ignored the teacher's schedule and did not participate actively in group learning experiences. She was spontaneously responsive only to an individualized relationship to the teacher, which was neither possible nor desirable. As a result, she quickly fell behind in reading achievement, even though she possessed superior intelligence. (It would have been very easy to label her "dyslexic"!) Another girl's mother was determined that her daughter should not be subjected to the rigid and arbitrary parental authority she herself had experienced as a child. For the mother, this meant avoiding--and even openly rejecting--training the girl in effective task performance. Although this did not interfere seriously with her social relationship, it had disastrous consequences for her academic achievement. Her problem in following instructions and focusing on objective learning tasks resulted in increasingly poor academic functioning.

For the Difficult Child, the adaptive course in a good school tended in most cases to be smoother at school than in the earlier years at home. The biological irregularity, which so often contributed to stress in establishing sphincter control and regular sleep and feeding patterns, usually did not present significant problems in the school schedule. Compared with parents, experienced and competent teachers were less likely to feel guilty, inadequate, or intimidated by such a child's behavior.

In general, it appears that there was no one-to-one correlation between the dynamics of the child-environment interaction in any individual case at home and at school. This is not surprising, given the difference in demands and expectations on the child in the two settings, and the differences in relationship of teacher versus parent to the child.

However, a common issue exists for both parent and teacher. As we have stated with regard to the former,

> A comparative analysis of children with common temperamental constellations, some of whom do and some of whom do not develop behavioral disturbance, provides a basis for the definition of styles of care and rearing and other environmental influences, which when interacting with a given temperamental pattern, serve as pathogenic or positive influences on growth and development. (Thomas, Chess, & Birch, 1968, p. 71)

With the substitution of "school functioning and academic achievement" for "behavioral disturbances," and "styles of teachers and classroom functioning" for "styles of care and rearing" in the above statement, it can serve as a statement of an approach to giving each child an optimal school learning experience.

Several other reports on temperament and school functioning have appeared in the literature. Seegars (Note 5) developed a behavior checklist to rate five characteristics of the elementary school child. Three of the categories are identified as the Easy Child, the Difficult Child, and the Slow-To-Warm-Up Child, with criteria derived from the NYLS. The checklist was filled out by the teachers of 508 children and compared with academic achievement and IQ. The easy children were the highest achievers, the difficult children were the lowest, and the slow-to-warm-up children were intermediate. There was no correlation with IQ level. Rutter (1974), in a review of emotional disorder and educational underachievement, noted strong associations between children's temperamental attributes and specific reading retardation. Poor concentration (on tasks other than reading), fidgetiness, restlessness, and impulsiveness were the traits most consistently associated with reading retardation. Carey, Fox, and McDevitt (1977) found a significant correlation between contemporaneous adaptability and teacher judgments of school adjustment in 51 children, ages five-and-one-half to seven years.

Thus, the data on the relevance of ART for learning and teaching, although not conclusive, are suggestive enough to give such studies a high priority. The delineation of specific correlations and elaboration of preventative and remedial measures appear feasible and important.

Implications for the Design and Management of Learning Experiences

It has been our consistent experience that most teachers at all grade levels have welcomed advice and guidance with individual problem children to change a "poorness of fit" to a "goodness of fit" between the child's temperament and the school's demands and expectations. In many cases, the teachers had intuitively formulated this approach, but then especially welcomed a systematic and structured presentation of this model for enhancement of student functioning. Where the teachers had not sensed the concept themselves, most were receptive to orientation in this direction because they could quickly relate it to their own empirical experience. There were always a few teachers, of course, who found the need for greater objectivity, and those teachers found it difficult to grasp the concept of individuality and its significance. For this group, the demand for flexibility in routines and schedules for specific children seemed to be threatening, confusing, anxiety provoking, or burdensome.

Currently available data on the significance of ART for the learning experience and new research findings, as they appear, should become part of teacher training and orientation programs. This should lead to specific guidelines for dealing with the special classroom needs of children with specific affective response tendencies. Such teacher programs should emphasize the simplicity with which the concepts can be applied, and the fact that most teachers already use this approach intuitively. Guidelines for identification and management should be specific and concrete, and clarified with appropriate case illustrations.

Orientation programs should be developed for school counselors and psychologists who are responsible for the evaluation and management of children with school difficulties, and for counseling and advising teachers. A section on the role of temperament should be included in the evaluations of pupils with school difficulties.

Implications for Research and Development

1. Research is needed on the relationship of ART to academic achievement and school behavior in different types of schools and with different educational approaches.

2. Research is needed on the relationship of ART to cognitive response tendency, motivation and aspiration, and ethnic and socioeconomic status.

3. Research is needed on the relationship of ART to specific affective characteristics, such as attachment behavior and empathy.

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Chapter 12

Cognitive Styles: Some Conceptual, Methodological, and Applied Issues

Stephanie Shipman and Virginia C. Shipman

Introduction

A basic assumption throughout this book is that individual differences do make a difference. But which differences account for what differences where and when? Our task is to identify those areas of difference that are likely to be highly relevant to the educational setting and to delineate those questions needing to be addressed before useful applications can be developed.

In this chapter we shall discuss those individual consistencies in behavior called cognitive styles, a term increasingly being used by both researcher and practitioner in the context of educational planning, but, as will be noted, without concurrent increased communication and understanding of the term's meaning. Conceived of as individual differences in modes of perceiving, remembering, and thinking (Kogan, 1971), cognitive styles would appear to have obvious implications for learning and instructional strategies. However, informed practice requires an informed knowledge base. In this chapter we will attempt to convey present understandings of the construct and to alert the reader to current issues and questions requiring further examination. To better delineate conceptual, methodological, and applied issues, three distinctive cognitive styles in current use have been selected for detailed discussion following a brief overview of the term's general meaning.

Broadly, a cognitive response tendency is conceived of as a relatively stable tendency to respond in a certain cognitive manner to a specified stimulus situation. Stable individual differences in these response tendencies are believed to reflect stable differences in information-processing among individuals responding to similar stimuli. These behavioral response tendencies, and the characteristic processing presumed to underly them, are referred to as cognitive styles to indicate that this stability extends over a variety of tasks with similar task demands and/or

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stimulus properties. Thus cognitive styles are generally considered to be information-processing habits: individually characteristic ways of interpreting and responding to the environment.

Although this highly general, relatively behavioral definition might be agreeable to most researchers and reviewers in this field, any definition or characterization of the construct or constructs underlying this behavioral stability encounters serious difficulties with implications for functional characteristics and educational practice. The underlying constructs proposed to account for these behaviors vary in the extent to which they make attributions to choice, ability, and personality factors. As Messick (1976) pointed out,

> Each individual has preferred ways of organizing all that he sees and remembers and thinks about. Consistent individual differences in these ways of organizing and processing information and experience have come to be called cognitive styles. These styles represent consistencies in the manner or form of cognition as distinct from the content of cognition or the level of skill displayed in the cognitive performance. They are conceptualized as stable attitudes, preferences or habitual strategies determining a person's typical modes of perceiving, remembering, thinking, and problem solving. As such, their influence extends to almost all human activities that implicate cognition, including social and interpersonal functioning. (pp. 4-5)

Presenting a comprehensive simple definition of this construct, cognitive style, is made difficult by the lack of a common colloquial use outside psychology. This is not to say that teachers and others do not recognize individual differences in pupils' approaches to learning experiences. The most common cognitive characteristic recognized is ability, or, better, facility in learning, but we often also make distinctions between students on the basis of their being "concrete" or "abstract," for example. Unfortunately, these are not very clear or standard conceptions; characterizations of this sort are usually arrived at on the basis of scanty, episodic evidence, and are often confused with possibly related, but not identical, characteristics such as personality, intelligence, or status in relation to Piagetian cognitive stage. What we refer to as cognitive style is essentially a product of psychological research in personality, cognition, and perception. Thus it does not have easily recognized referents in the domain of normally observed behaviors, nor commonly understood boundaries.

The following list from Messick (1976, pp. 14-22) is the most comprehensive one that we have found of those constructs considered to be dimensions of cognitive style. It includes a few more dimensions (and subdivides others) than earlier lists by Messick (1971) and Kogan (1971). Although we question the appropriateness of including some of these constructs, we have listed them all in the interest of stimulating a more comprehensive discussion. The definitions presented are abbreviated versions of Messick's descriptions.

Abbreviated Glossary of Cognitive Styles

Field independence--dependence: a consistent mode of approaching the environment in analytic as opposed to global terms. . . . with facility in differentiating objects from embedding contexts as opposed to . . . experiencing events globally [and objects as affected by context]. . . . The field-independent pole includes competence in analytical functioning combined with an impersonal orientation, while the field-dependent pole reflects correspondingly less competence in analytical functioning combined with greater social orientation and skills.

Field articulation: [the two poles are] relatively independent modes of perceiving complex stimulus arrays, ... [with attention paid to] discrete elements of a background pattern [element articulation] . . . [vs.] large figural forms against a patterned background [form articulation]

Conceptualizing styles: [categorization of stimuli by virtue of] thematic or functional relations among stimuli (relational), . . . analysis of descriptive attributes (analytical-descriptive), or inference of class membership (categorical-inferential)

Breadth of categorization: broad inclusiveness [vs.] narrow exclusiveness in establishing the acceptable range for specified categories. . . . This dimension reflects differential tolerances for different types of errors, with broad categorizers tolerating (or preferring) errors of inclusion and narrow categorizers tolerating errors of exclusion.

Conceptual differentiation: [number of varied dimensions used to categorize perceived similarities and differences between stimuli] . . . . usually asessed using free-sort tasks which require spontaneous classification of heterogeneous stimuli into an unrestricted number of groups

Compartmentalization: isolation of ideas and objects into discrete, relatively rigid categories . . . . entail[s] possible limitation in production of diverse ideas

Conceptual articulation: [number of dimensions used to discriminate between objects within a domain or class] This notion is related to category width [breadth of category] (which refers to the perceived . . . extent of the concept's range of reference, within which either fine or coarse discriminations might be made among instances).

Conceptual integration: extent to which categories or dimensions are perceived to be interrelated in [a variety of] ways, ... and extent of alternative perspectives [generated by various combinations of these interrelations], which themselves can then be further compared, synthesized, and hierarchically interrelated

Cognitive complexity--simplicity: differences in [viewing] the world, particularly the world of social behavior, in a multi-dimensional and discriminating way, ... [extent to which a person's] conceptual system is [simultaneously] highly differentiated, . . . articulated, . . . and flexibly integrated. . . . sometimes referred to as abstract vs. concrete dimension . . . . Cognitively complex individuals being attuned to diversity, conflict, and inconsistency, are more [confident] and effective in processing dissonant information. [Conceptual level has been used to refer to this dimension combined with interpersonal maturity.]

Leveling--sharpening: [blurring vs. magnifying differences between stimuli in memory] . . . . Sharpeners, [being] less prone to confuse similar objects . . . may thereby exaggerate change and heighten the difference between the present and the past.

Scanning: differences in [both] extensiveness and intensity of attention deployment, leading to individual variations in vividness of experience and the span of awareness

Reflection--impulsivity: [willingness or ability to] reflect upon the accuracy of one's hypotheses and solutions in a situation of response uncertainty [as indicated by] the speed and adequacy with which alternative hypotheses are formulated and information processed

Risk taking--cautiousness: willingness to take chances to achieve desired goals [vs. desire] to seek certainty and avoid exposure to risky situations . . . . implies preference for low probability-high payoff alternatives over high probability-low payoff options. . . . Risk takers, for example, are more likely to guess on difficult multiple-choice items.

Tolerance for unrealistic experiences: differential readiness to accept perceptions and ideas at variance with conventional experience

Constricted--flexible control: susceptibility to distraction and cognitive interference. . . . involves the extent to which an individual restricts attention to relevant cues and actively inhibits competing learned responses

Strong--weak automatization: [ipsatively,] relative ability to perform simple, repetitive tasks, . . . [given] one's general level of ability

Conceptual--perceptual-motor dominance: [relative dominance of conceptual or perceptual-motor behaviors in response to novel or difficult tasks]

Sensory modality preference: relative reliance upon . . . . kinesthetic, . . . visual, . . . or auditory [interactive] modes . . . . also referred to as enactive, ikonic, or symbolic modes of information organization. . . . Two important development shifts occur with respect to these sensory modes. One involves a progression from a preference for the kinesthetic in the early years to . . . ultimately the auditory or verbal. The other involves a progressive increase in the capability to coordinate and integrate information obtained through one sensory modality with information obtained through the others.

Convergent--divergent thinking: relative reliance upon . . . logical conclusions and uniquely correct or conventionally best outcomes . . . [vs.] . . . variety and quantity of relevant output . . . . [This dimension] has been studied as . . . an intelligence vs. creativity distinction, with special emphasis upon ideational fluency in the production of unique, original, or novel responses as the hallmark of creativity.

From the above list it should be clear that there is a considerable variety among the processes indexed by the various cognitive styles, and that styles have been defined at different levels of discourse and as operating at different levels of generality. Although as a class of constructs cognitive styles are considered to refer to a broad range of human functioning, few of the identified styles have been studied over a wide range or would even be expected to remain stable over a great variety of situations. Similarly, styles vary in the extent to which the underlying construct has been conceptualized as basic to the individual's personality. On the one hand, some styles have been considered as internal rules and principles of mental organization, reflecting one's level of cognitive development or maturity, and affecting processing in a broad-based manner through alterations in cognitive structure. On the other hand, other styles are less ambitiously referred to as typical response modes to particular, specified, situations or stimuli. This variation in the conception of style is partly due to the varied theoretical proclivities among researchers in the field, and partly due to the variety of phenomena included in this category.

Moreover, although some styles appear to overlap, among the remainder some appear to have been made purposely distinct, whereas others have no apparent connection with the other styles in the list. This irregularity is primarily the result of styles having been identified on a one-by-one basis by different groups of researchers, at different points in time, in pursuit of addressing different research questions. This historical trend has created some conceptual problems for the construct of cognitive style as a whole, as well as for particular styles. These problems will be discussed after a more detailed presentation of information concerning particular styles. In reviewing this information, however, the following caveats are important to consider: (a) it is difficult to characterize the general domain of cognitive style in a detailed manner without being false to any particular style; (b) the boundaries of the larger construct are still poorly defined and under discussion; and (c) we have no assurance that the above list is either comprehensive or without redundance.

Cognizant of the above caveats, we have organized the rest of the chapter in the following manner. First, we present three cognitive styles that, if not entirely representative of the various styles so far identified, are substantially different from one another and have the advantage of being the most comprehensively researched among those currently being studied. Brief discussions of issues and problems peculiar to a particular style follow its description and a review of pertinent findings; larger issues common to the majority of styles and/or to the construct in general follow these expositions. Although suggested educational applications have been included with reference to each style, a general discussion of implications for education, as well as for future research and development, follows in a concluding section.

Field Dependence-Independence

The field dependence-independence dimension, as the most researched style, serves us well as a starting point because its functions and problems are central to the study of styles. The concepts "field dependence" and "field independence" were originally used to describe tendencies to rely primarily on visual or gravitational cues in determining the upright in space (Witkin & Goodenough, Note 1). Field independence was originally identified as a relatively stable tendency not to err in determining the upright in a deliberately and clearly misinformative context-field that requires the person to make use of an internal standard of upright to succeed. In the Rod-and-Frame Test (RFT), the individual is asked to bring a strongly tilted luminous rod, inside a tilted luminous square frame, to an upright in a darkened room that bars the use of other contextual cues. In the Body Adjustment Test (BAT), people sit in a tilted chair in a tilted small room and are requested to bring themselves to an upright position, as they experience it. After empirical research ruled out perceptual accuracy and body sensitivity as explanatory constructs for consistency in using visual or body cues in these space-orientation situations, and performance was found highly related to the ability to find a simple figure within a more complex design (the Embedded Figures Test, EFT), performance on these tasks was considered to represent different aspects of the ability to overcome an embedding context. The emphasis on the embedding nature of the context arose from the finding that these tasks generated a factor different from that defined by tasks with simply distracting contexts (Karp, 1963).

Over a number of studies with different (and usually small) groups, correlations between various versions of the RFT and EFT have ranged between .30 and .65, whereas correlations with the BAT are slightly lower for both indices. Witkin, the major researcher on this style, and his colleagues have used a combined score on these three measures in their extensive cross-sectional and longitudinal studies of this construct relative to both the intellective and personality domains. Whereas correlations between measures of field independence and IQ have ranged from .40 to .60 in their studies, as well as in the literature generally, correlations with academic achievement and aptitude have tended to be somewhat lower.

> To specify more precisely which of the WISC subtests might be responsible for the relationships between field independence and total IQ, Goodenough and Karp (1961) carried out a factor analysis of all the relevant measures. The identical three factors emerged for ten- and twelve-year-olds, and these were reasonably congruent with an earlier factor analysis of the WISC (Cohen, 1959). The first factor--verbal comprehension--was distinguished by substantial loadings for the Vocabulary, Information, and Comprehension subtests. The second factor--concentration-- . . . . Finally, the third factor was designated analytical field approach by virtue of substantial loadings for Picture Completion, Block Design, and Object Assembly. The BAT, RFT, and EFT yielded substantial loadings only on this third factor. . . . It is on the basis of such correspondence across the perceptual and intellectual domains that their major construct was redefined as an analytic vs. global field approach. Field

> dependence-independence is currently treated by the Witkin group as the perceptual aspect of a more pervasive analytic-global cognitive style. (Kogan, 1971, p. 250)

These findings suggest (aside from the single-factor structure of these measures) that the relationship between the field dependence-independence dimension and intelligence (i.e., WISC performance) derives from its relationship to the analytical subtests in the spatial mode. Other studies of the relationship with intelligence have generally found that although field-independent performance is not particularly related to general verbal intelligence, it is, as one might expect, correlated moderately with measures of spatial abilities. These moderate correlations suggest that although these three WISC tasks measure something more than spatial ability, studies of the correlates of field independence ought to include control of spatial ability more often than has been the case.

Partly because of evidence of the single-factor structure of the three measures, most of the studies by Witkin's research group, and particularly those by other researchers, have used Embedded Figures Test performance, rather than a composite score on the RFT, BAT, and EFT, as the standard measure of field dependence-independence. The EFT in particular was chosen because of ease in scoring and administration (particularly relative to the equipment costs and manageability involved in the other tasks), and its very high reliability. In the Sixth Mental Measurements Yearbook (Buros, 1965), EFT reliability calculated by odd-even, retest, or analysis-of-variance was reported to be excellent, with a median coefficient over ten studies of .91. A relatively field-dependent style, as measured by the EFT, has proved to be one of the most stable cognitive styles identified, partly because of the test's excellent psychometric properties. Bauman (1951) reported stability coefficients of .89 for both men and women on the EFT after three years. Witkin and his colleagues obtained similar findings for young female adults over one-year and three-year intervals (Witkin, Dyk, Faterson, Goodenough, & Karp, 1962/1974). Longitudinal studies of children indicate high levels of stability in individual rank relative to their age group, although performance on the average improves with age through adolescence (i.e., absolute errors and latencies decrease). This developmental trend concurs with general expectations concerning children's increasing analytic competence and psychological differentiation (i.e., individuation of self from one's environment as well as among components of the self).

Small but significant sex differences in the extent of field independence are a consistent finding in studies of adolescents and adults, with males performing slightly more field independently. Although this style becomes evident as a coherent cluster of measures as early as six to seven years of age (Witkin & Berry, 1975), findings of sex differences among children are less consistent, with girls sometimes performing more field independently than boys. Thus, as Van Leeuwen (1978) noted in her recent review, as studies proliferate, it appears that what was thought to be a stable sex difference from early childhood on is, in fact, not a consistent or significant difference until early adolescence. Also, correlations among the different measures of field dependence-independence often are quite different for males and females in a single sample, but the sample sizes are generally too small to provide highly stable estimates. In their review of sex differences, Maccoby and Jacklin (1974) suggested that differences in visualization abilities rather than in style are being assessed. It should be noted, however, that these differences in means are small compared with the range of scores within each group.

Earlier a genetic component or a biological predisposition in the development of field dependence-independence was seriously considered, given an apparent strong perceptual component and the relationship to spatial abilities, but it was later de-emphasized in favor of a learning/socialization explanation of the origin of this style. The relationship between socialization practices and the development of field-dependent and field-independent cognitive styles receives support from several studies, particularly those based on direct observation (Goodenough & Witkin, Note 2). For example, Dyk and Witkin (1965) and Laosa (Note 3) have reported moderate correlations linking the extent of independence training by the mother with the extent of field independence in their children. Evidence that the father's role is crucial in the development of field independence, especially in boys, is presented by Goodenough (1978). He concluded from his review of parental influences "that the father is important in intact families because his parental participation facilitates separation from the mother" (p. 201). In addition, cross-cultural research has linked the extent of sex differences in this style to variations between cultures in divergence of sex roles as well as in types of sex-role socialization. Sex differences appear to be more common in sedentary agricultural societies than in mobile, hunting societies--societies which are characteristically different in sex-role training and in the value attached to women's role in the economy--and these differences tend to be associated with "tight" cultural variables such as stratification and pressure toward conformity (Witkin & Berry, 1975). Similarly, within each sex, differences in field independence have been found between people with "masculine" and "feminine" interests and activities.

More generally, however, there appear to be significant differences between cultural groups in the average level of their members' field independence--differences that appear related to the same cultural dimensions as those operating to influence the development of sex differences in field dependence within a society. Individuals from agricultural-based, subsistence-level societies tend to be relatively field dependent, a relationship that seems to be mediated by the apparent emphasis on conformance to authority in such societies.

> The evidence from these studies together suggests that a relatively field-dependent cognitive style, and other characteristics of limited differentiation, are likely to be prevalent in social settings characterized by insistence on adherence to authority both in society and in the family, by the use of strict or even harsh socialization practices to enforce this conformance, and by tight social organization. In contrast, a relatively field-independent cognitive style and greater differentiation are likely to be prevalent in social settings[1] which are more encouraging of autonomous functioning, which are more lenient in their child-rearing practices, and which are loose in their social organization. (Witkin & Berry, 1975, p. 46)

These studies also demonstrated the cross-cultural generality of the original Dyk and Witkin (1965) findings by confirming the influence of the same set of socialization variables as Dyk and Witkin identified even across cultures differing in average levels of field dependence-independence: encouragement of the child's separation from the mother, self-reliance, initiative, and resourcefulness.

In noting these findings we must recognize, however, that typically there is great variability within any one cultural group, as well as considerable overlap among various cultures. Moreover, as Laosa (1977) has pointed out, the issue of culture and learning becomes quite complex when one deals with "cultures in contact" that are undergoing acculturation and other social change. If, as suggested (Witkin & Berry, 1975), characteristic cognitive styles are adaptive to the ecological and cultural setting, one would expect that cognitive styles would change as a result of acculturation. Ramírez and Castañeda (1974) and Laosa and DeAvila (1979) found this to be the case when they compared the relative extent of field dependence in traditional and dualistic Mexican American communities. Thus it is particularly risky to make generalizations with regard to "embedded cultures" in which resources usually are controlled largely by a dominant cultural group.

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[1] Witkin and Berry are referring to sociocultural environments, not specific situations or contexts within these macro-environments.

In addition, although there is evidence that childhood socialization practices characteristic of certain cultures tend to foster the development of particular cognitive styles, it is risky to generalize such group findings to individuals. Ethnic groups are not homogeneous. Not only is there considerable overlap among various groups, but other factors, alone or in combination, may be equally or more influential. For example, Laosa (1977) reported that socioeconomic status differences in maternal teaching behaviors within his Mexican-American and Anglo-American samples were much greater than the differences found between the two groups.

Among the various cognitive style dimensions identified, field dependence-independence has shown the widest application to educational practices to date. Many studies in the past few years have attempted to determine more specifically how differences in field dependence-independence affect learning. Witkin, Moore, Goodenough, and Cox (1977) concluded from their extensive review that although field-dependent and field-independent students are not particularly different in learning ability or memory, they do differ in the kinds of material they learn most easily and in the strategies they use for learning. Specifically, this style has been found to have particular importance for the learning of social material, the effects of social reinforcement, the use of mediating mechanisms, and cue salience. "Relatively field-dependent and field-independent persons seem not to be appreciably different in sheer learning ability or memory. However, reflecting differences in what is relevant, attended to and salient, field-dependent persons tend to be better at learning and remembering social material than persons who are relatively field-independent" (p. 18). Yet, apparently field-independent children only need to have the social material brought to their attention to equalize their learning performance relative to that kind of material. In discussing differential effects of reinforcement, Witkin et al. (1977) stated, "Field-independent persons have been shown to learn more under conditions of intrinsic motivation (for example, Fitz, 1971; Paclisanu, 1970; Steinfeld, 1973). However, this difference disappears when external rewards for learning are introduced, regardless of whether the rewards are material in nature or in the form of praise (for example, Ferrel, 1971; Paclisanu, 1970; Steinfeld, 1973)" (p. 20).

Witkin et al. (1977) reported that other studies have shown relatively field-dependent children to be more sensitive to social reinforcement; they often achieve more in classrooms where they enjoy positive teacher attention, but they also often take negative criticism more harshly. Before we suggest offering different kinds of reinforcement to children of different cognitive styles, however, we would want to examine other findings suggesting the preferability of adjustment to intrinsic motivation for adult success, as well as those indicating the problematic assessment of intrinsic-extrinsic motivation in different social status and ethnic groups, as recently described by Banks (1978).

Field dependence-independence, or the extent to which the person perceives part of a field as discrete from its surrounding whole, apparently extends far beyond the perceptual domain implied by the form of these measures. This style is manifest in problem solving that requires isolating an element from its context and restructuring the field to provide a new context, as in the "insight" and "response set" problem-solving tasks studied by Duncker (1945), and in those tasks requiring imposing structure upon unorganized fields, whether Rorschach inkblots or verbal materials. Field-independent persons are more likely to both analyze a structured field and impose structure where it is not obvious. Consequently, when there is no inherent structure to the material to be learned, or no feedback on performance, field-independent students tend to do better.

As a result, field-dependent persons are said to favor a "spectator" approach to learning rather than a hypothesis-testing aproach to concept attainment, although they can use the latter approach in particular tasks when expressly asked to do so. Since this is apparently the result of reluctance or inability to ignore or deviate from the highly salient cues in a field, they are characterized as passive learners who require a problem to be structured similarly to the solution in order to solve it. Even when encouraged to use a hypothesis-testing approach, hypotheses are formed on a different basis, with those by field-dependent students dominated by the salient cues available (Goodenough, 1976). Depending on the problem, of course, a reliance on salient cues may lead either to more rapid or less rapid concept attainment. Needless to say, however, very few problems outside of school are structured appropriately to our skills and needs. Thus a highly field-dependent approach, or a reinforced reluctance to alternatively structure fields, be they tasks or situations, can become an even greater disadvantage to the learner outside of school.

Particularly impressive evidence for the fundamental quality of this dimension of individual differences is that relating to the social domain. Field-dependent persons are more likely to attend to and use the prevailing social frame of reference. Compared with field-independent persons, they spend more time looking at faces, attend more to statements with social content, are swayed more by opinions of authorities in ambiguous situations, and prefer shorter physical distances between themselves and others. As might be expected from these findings, field-dependent persons also appear to be better liked, perceived as warm and tactful, and to know and be known by more people (Witkin et al., 1977). They are not, however, more dependent upon social approval, as the label might suggest (Goodenough, 1978).

Especially relevant to the concerns of this volume is evidence suggesting that there are differences in the methods employed by field-dependent and field-independent teachers and that these are congruent with the personal characteristics associated with these two styles (Witkin, 1976). Field-independent teachers, for example, were reported to favor using a lecture or discovery approach vs. a discussion method, approaches that assume greater responsibility for directing learning. Similarly, Laosa (Note 3) reported that mothers' choices of teaching strategies with their preschool children were consistent with the mothers' cognitive styles. Stone (1976), however, in examining second- and fifth-grade teachers' self-reported and observed classroom behaviors, found that the relationship between field dependence-independence and teaching performance was associated with grade level and probably influenced by teaching task. Several behaviors characteristic of field-dependent second-grade teachers were characteristic of field-independent teachers in fifth grade. It is highly probable, however, that given their different contexts, these "same" behaviors were intended and perceived differently. Though expressed differently, the same variable relationships may have been maintained.

Related to the above findings are those describing apparent differences in modes of interaction between people with different cognitive styles (Witkin & Goodenough, 1977). For example, DiStefano (1970) found that cognitive style-matched teachers and students rated each other more highly on both academic and personal qualities. According to Witkin et al. (1977), such interpersonal attraction may reflect shared interests, shared personality characteristics, and/or similarity in modes of communication. It may function to exclude alternative viewpoints without the actors' being conscious of any intention to purposefully exclude others from positions of influence. This finding has broad implications, including the traditionally difficult access by females to male-dominated educational and career areas. Witkin and his colleagues (1977), however, have pointed out some of the complexities of the relationship between cognitive style match-mismatch and student achievement, and have recommended caution concerning the desirability of matching before a great deal more is known as to its consequences.

Extensive research has related field dependence-independence to many other dimensions of behavior that cannot be adequately covered here--for example, interests, stability and change in college major, occupational choice, type (not degree) of neurotic or psychotic symptoms, etc. Evidence of association with such a broad range of functioning points to the importance of this psychological construct, but we stress the fact that even though these relationships are generally statistically significant, they are usually of low to moderate magnitude and not all of them have been validated on any single sample or even on the same measure of field independence. Furthermore, there has been little attempt to show that these relationships with field dependence-independence are not due to some related but uninvestigated characteristic such as sex-role, intelligence, or spatial ability. Thus we urge caution in characterizing individuals on these dimensions on the basis of their standing on field dependence-independence.

Whether this construct should actually be considered a style rather than an ability has been a confusing issue in the cognitive style literature. An important component of the popularity and promise in the study of cognitive styles is the understanding that styles are importantly different from the domain of cognitive abilities by being value-free descriptions of the mode, not the level, of cognitive functioning. These two points bear repeating: (a) styles are conceived of as qualitative descriptions of processing; and (b) one valence or end-point of a dimension of style is not to be valued more, a priori, than another. Moreover, it is hoped that their relevance as characterizations of functioning will connect personality and cognition as domains of study as well as behavioral contexts. Yet, the field dependence-independence dimension, perhaps more than any other style, appears to operate, and is definitely measured, as an ability construct.

Field-independent responses on the standard measures imply only a capacity for a field-independent response and give no information about the person's propensity, likelihood, or tendency to do so because task solution requires this response. In these tasks there is obviously a correct response whose attainment requires a field-independent approach. On the other hand, field-dependent responses, assuming that the task's intent is understood, imply an inability to respond field independently because, given the task demands, persons would have done so if they could.

Witkin acknowledged that his measures are testing the ability to disembed. He was not too concerned about the problem of generalizing this information to situations involving more choice for the individual because he believed that unlike the field-independent person, the field-dependent person is constrained to respond in a field-dependent manner (Witkin, 1976). He thought that field dependence-independence is a perceptuo-cognitive manifestation of the more basic personality construct, psychological differentiation, which is explicitly value-laden. Within the theory, psychological differentiation is considered a necessary, if not sufficient, condition for maturity. Thus field independence, as a manifestation of psychological differentiation, is considered the more mature pole of this construct. This value judgment encouraged the restriction of research questions to those concerning the advantage field-independent people have in traditional academic pursuits that favor analytic ability. It took considerable time for researchers to begin to pose questions about the positive aspects of field dependence as a style rather than as a lack of ability.

Recently, Witkin & Goodenough (Note 1) radically altered their conceptions of the constructs involved in field dependence-independence and its assessment instruments. Rather than focus on disembedding ability as the central factor in performance on the various measures of field dependence-independence, they now view these performances as caused by "two separate but related functions: reliance on vestibular or visual-field referents and cognitive restructuring" (p. 2). The vestibular-vs.-visual factor is central to the strength of a variety of illusions involving self-movement and altered gravitational conditions as well as visual cues. Interestingly, they suggested that this dimension may be bipolar because "while field-dependent people are particular susceptible to illusions induced by displacement of the visual field, field-independent people may be particularly susceptible to other illusions induced by vestibular stimulation" (p. 19). Relatively field-dependent persons, for example, do better in estimating the upright in the Rotating Room Test.

Cognitive restructuring is clearly recognized as the ability "to achieve a different percept [than the immediate, commonly perceived one], when required [to] by situational demands or inner needs, through restructuring of their initial perceptual experience" (p. 4). Spatial restructuring is involved in a variety of cognitive dimensions related to RFT and EFT performance, e.g., speed of closure, functional fixity (as in Duncker's 1945 problem-solving tasks), Piagetian conservation, and the ability to take another's perspective. Only limited work has been done on restructuring in the verbal domain. At the level of "disembedding" letters from words, performance in verbal and spatial domains emerges separately in factor analytic studies. A few studies in sentence disambiguation (Goodman, 1971; Lefever & Ehri, 1976) have identified a relationship to EFT performance that may permit extension of cognitive restructuring beyond the spatial to the verbal domain.

In addition, Witkin and Goodenough offered a hierarchical model for ordering the entangled variables of differentiation, disembedding, field dependence-independence, etc., about which we have expressed concern. They perceived "autonomous functioning, in both perception of the upright and in interpersonal behavior, at the apex of the cluster, as a broad superordinate construct, and cognitive restructuring skill and interpersonal competence as subsidiary constructs, at a level below the apex" (p. 24). They asserted that this new conceptualization should ease the difficulties in the cognitive style literature, which we have already discussed--i.e., those concerning the distinction between style and capacity, and between process-oriented and content-oriented descriptions of functioning--and thereby pertain to a wider variety of behavioral domains. This current conception views the extent of autonomy of external referents as the most general dimension of functioning identified, and in several ways conforms to the general notion of style that we have tried to present here. In their 1977 report, Witkin and Goodenough (Note 1) also presented their decision to transfer the label field dependence-independence "to this higher-level dimension . . . from its lower-level location in our earlier conceptual scheme as a perceptual disembedding ability" (pp. 31-32).

We perceive this as a dramatic move on their part, but have discussed the construct as it has been treated and operationalized in the past decade with all the attendant ambiguities and contradictions that inevitably result from such a course. Nevertheless, this is the present state of general knowledge about the construct, not yet reflecting Witkin and Goodenough's recent reformulation.

In the paper by Witkin and Goodenough (Note 1) referred to earlier, they, apparently for the first time, also explicitly recognized that although measures of restructuring skills and interpersonal competencies tend to be inversely related, the magnitude of this relationship does not preclude the existence of different patterns of competencies. "Indeed, it seems reasonable to believe that with appropriate life circumstances and educational experiences, people may acquire access to both cognitive restructuring skills and interpersonal competencies, whatever their standing on the field dependence-independence dimension" (p. 34). Thus they identified a new dimension of individual differences: mobility-fixity in regularity of showing the characteristics of a particular style. Whereas field dependence-independence, as presently considered by Witkin and his associates, is a value-free characterization, extent of mobility in style expression is differentially valued because mobility signifies greater diversity and, therefore, adaptability in environments that differ in their demands upon the person's competencies.

To say that the EFT and RFT measure a disembedding or cognitive restructuring ability in a spatial mode, however, does not deny their value in providing useful, more specific information for adapting instruction to individuals than that gained from broad-gauge aptitude tests. Learning experiences can be analyzed for demands on analytic skill to ensure their appropriateness for the range found in any specific group of learners, and those with lower levels of skill could be aided with prompts, and so forth. As a developed ability with clear advantages for efficient functioning in a variety of situations, this approach clearly deserves more investigation concerning its development and the possible avenues for facilitating its availability to students as a useful strategy.

Most field-independence training studies show little effectiveness, but the training tends to be of short duration and with little insight into the nature of the disembedding task. In one very interesting study into the dynamics of childhood sex differences on Children's Embedded Figures Test performance (Connor, Shackman, & Serbin, 1978), 133 first-, third-, and fifth-graders were exposed to one of three one-session training sessions: (a) five complex pictures consisting of a diamond and three overlays where the child could directly observe the transformations provided by the removable overlays; (b) five flat complex figures where the child was asked to find the diamond or was shown it if he/she was unable to find it; and (c) five to ten minutes talking informally with the experimenter. Although there was no difference in post-training CEFT mean scores across training conditions for the boys, there were large differences among the training conditions for the girls. The girls showed nonsignificantly higher scores than the boys after the overlay training condition, whereas they had significantly lower mean scores than the boys in the control condition. Whether this sophisticated kind of training actually compensates for alleged lack of early spatial relations manipulation experience for the girls or whether under sustained practice it would effect the broader cognitive processing assumed to underly field-independent performance are questions for further research. This example shows how conceiving of these styles as stable characterizations of accessibility could be maladaptive. Assessments must be recognized explicitly as descriptions of present functioning on a particular task. Otherwise, we could be led to ask restrictive application questions such as which activities or tasks should we not expect field-dependent students to succeed in, thus precluding the possibility of helping them achieve those tasks.

As our summary of findings suggests, field-dependent and field-independent students approach learning tasks, consciously or not, in qualitatively different ways, make use of different strategies, and require different aids in classroom instruction. In designing educational programs such differences need to be taken into account, so that stylistic differences are not defined as differences in competence. Ramírez and Castañeda (1974) have recommended a number of curriculum and instructional approaches sensitive to the relatively field-dependent styles of Mexican American children, for example, personalizing and humanizing the curriculum content for easier learning and retention. Such variations can be and should be readily available to effect equal educational opportunity.

A main question in identifying educational implications of this research, however, is whether to concentrate on the short- or long-term effects, or whether an intelligent adaptive combination can be achieved. For example, as Witkin (1976) pointed out, field-dependent students tend to do poorer in their mathematics and science classes, but it is undetermined whether this reflects a cognitive style-skill relationship, personal incompatabilities of cognitive style-mismatched students and teachers, individually inappropriate teaching techniques preferred by field-independent teachers, or a cognitive style-interest relationship separate from the action of these other processes. In the interests of improving mathematics and science literacy, various educational strategies could be devised and experimented with: special encouragement for field-dependent mathematics and science teachers, alternative modes of instruction, homogeneous grouping, teacher training in the use of alternative styles for individuals, and combinations of all of these. On the other hand, these adaptations to the student's preferred mode may serve to harden his or her preferences into a more extreme position that could serve as a disability outside of the special environment of the school. To train children adequately, to develop competence with meaning outside of the school, it is our belief that we should teach for maximum flexibility and resourcefulness, and not for the easiest way to get through a particular curriculum. We will discuss this issue further in the concluding section.

Conceptualizing Styles

Conceptualizing styles, also referred to as conceptual or categorizing styles, are concerned with the criteria used in perceiving objects as similar to one another. One's style is measured by some form of sorting or grouping task in which one is asked to group objects (or their visual or verbal representations) on the basis of their (perceived) similarity. Several investigators have been interested in the extent to which people differ in the relations they perceive between objects and concepts. Accordingly, different systems or models for analyzing these differences, as well as different measures and terminologies, have been developed. The most popular model recognizes three distinct styles or modes of conceptualization/categorization: relational, descriptive, and categorical-inferential (Kagan, Moss, & Sigel, 1960). Relational implies spatial or temporal functional relationships among the objects in a group, often including a thematic quality. Descriptive responses involve grouping by similarity on some objective physical attribute of the stimuli. Categorical-inferential refers to treating objects as wholes and as instances of a conceptual label. Conceptualizing style, therefore, is an example of a style dimension measured without reference to a correct answer, but for which responses are, nevertheless, often evaluated on a continuum of developmental sophistication.

> In subsequent work (Kagan, Moss, & Sigel, 1963) the descriptive response was re-labeled analytic descriptive (and ultimately simply analytic) because of the implied analytic separation of an element of similarity from irrelevant aspects of a stimulus. Such analytic concepts are presumed to reflect an active conceptual analysis in contrast to relational concepts, which presumably involve a passive acceptance of the entire stimulus. In Kagan et al. (1963) and later work by these authors, the inferential-categorical classification is ignored in favor of the simple analytic-nonanalytic (i.e., descriptive-relational) distinction. Though Kagan et al. (1963) maintain that the foregoing dimension is linked to Witkin's construct of analytic vs. global functioning, the evidence would now seem to suggest that the two dimensions are relatively

> independent of each other (see Wallach, 1962). Wachtel (1968) has proposed that the basic dimensions of the Witkin and Kagan groups can be distinguished on the basis of a capacity for analytic functioning and a stylistic analytic preference, respectively. (Kogan, 1971, p. 262)

Originally, free sorts of a variety of objects were used, allowing the examinee freedom in determining the number, size, and content of the groups formed. These free-sort responses also were coded for the stylistic dimension, conceptual differentiation, referring to the number of different dimensions used to relate particular stimuli. Since attempts to combine these different scores into a more complex characterization of a person's conceptual predispositions were unsuccessful, they are presently considered as distinct styles. Conceptual differentiation is often considered an alternative form of category breadth because it is indexed by the number of groups formed, which is obviously interdependent with the number of objects in each group. It is partly because of this confounding of the number and size of groups formed in free sorts that researchers have opted for the more restricted "comparison-with-a-standard" approach in investigating conceptual styles.

Unlike measures of field dependence-independence, there are alternate criterion measures to assess conceptualizing style that differ importantly in their form and in the results that they produce. One dimension of variation is the number of objects employed in a single item of comparison. Kagan's Figure Sorting Task asks which of two human figures belongs with a third one. This is the most popular of several tasks constructed for research purposes. (Another version for group testing also includes pictures of objects.) In Sigel's Object-Picture Categorizing Task (Sigel & McBane, Note 4), the experimenter presents separately each of twelve familiar objects (or their colored photographs) and asks the individual to put with it those of the eleven remaining that are the same or belong (go) with it. Sorting rationales for this task are scored on the same dimensions with some refinements useful for young children's responses (e.g., differentiating types of nonscorable responses). Recognizing the influence of group size on type of concept used, Denny (1975) devised the Picture/Pairing Test to explore children's conceptual preferences.

In addition to allowing observation of group size, the Sigel task elicits a greater variety of grouping rationales than does the Kagan Figure Sorting Task, because of the wider variety of objects used. Designed for use with children, the objects were carefully chosen to allow sorts according to color, shape, and structural properties, functional relations, and common classifications. This specification, too, reflects accommodation to earlier research findings indicating that the relative frequencies of sorting rationales for an age group were heavily dependent upon the particular objects presented. In the Sigel task one can also score for the kind of descriptive attribute that is used in the sorting, and results show a clear developmental trend from color to form, which suggests the influence of instruction on the sorting rationales used by children at various ages.

Kagan, Moss, and Sigel (1963) reported significant decreases in relational concepts and significant increases in analytic concepts with increasing age among elementary school children. Expectations for a clear developmental sequence to these categorizing styles must be modified, however, in accord with more recent findings. Sigel, Jarman, and Hanesian (1967) reported that although analytical and categorical-inferential responses increase with age, relational-contextual responses tend to remain stable. Denny (1976), studying conceptual preferences in children aged 3, 4, 5, and 9, reported a distinct developmental sequence in conceptual preferences with complementary (relational), perceptible (descriptive), functional, and nominal concepts increasing significantly at various ages. Like Sigel et al. (1967), he also found that the number of relational responses did not decrease as similarity responses increased; instead, as children grew older, fewer nonscorable responses were given. He did find evidence, however, for a concrete-similarity to abstract-similarity shift, to a large extent caused by a decrease in color responses as children grew older. Denny suggests that the lack of replication of the earlier Kagan et al. (1963) findings is due to methodological differences. The Conceptual Styles Task, which was originally used, forced the child to choose between a relational and an analytic concept when deciding which two of three objects were alike or went together. It also should be noted that on all these tasks the child must verbalize the sorting rationale. Thus a child who is capable of thinking in abstract concepts, but is not capable of verbalizing them, may choose a method of grouping that he or she can explain instead.

These findings may also result from two different phenomena: during the age range studied, children are only as yet learning the classificatory schemes and labels so that the task is measuring concept attainment in school, and certain objects may have such strong associational relations that they overpower impulses to classify analytically. V. Shipman (unpublished data) has found in a longitudinal study of predominately low-income children that the number of appropriate rationales on the Sigel Categorizing Task correlates moderately high with cognitive ability and academic skill measures through the preschool and early school years. It would appear that "categorization style" really reflects learned conceptual categories up until middle childhood, at which time it begins to function as a style measure rather than as a measure of academic achievement, i.e., the acquisition of concepts and rules. In this same study it was found that descriptive responses increased significantly when the children attended preschool, as they quickly identified various shapes. Relational responses appeared later as children attended to other properties. The number of different categories used was itself a useful index of the child's increasing cognitive maturity. Thus we believe that it is misinformative and illogical to assert that a child has a particular cognitive style because she/he uses a particular sorting rationale, as if the child had made a choice among possible (to the adult) categorization modes, which are not yet, in fact, part of the child's repertoire.

It is also possible that the form of the categorizing task contributes to the imperfect relationship between age and categorization style. Whereas all the perceptual measures of field dependence-independence score examinee responses relative to the correct response, these free-sort categorization tasks have no one correct answer. Thus free sorts are not power or speeded tasks but operate as true style tasks in which the examinee's own task definition and modus operandi emerge. In such a task we can expect developmental level and categorization style to be highly related only if we assume that the child prefers to use the most developmentally mature mode of which she or he is capable. When the child has been encouraged to structure the task, we cannot treat that task as a power test that elicits the most mature or complex response available. It also should be noted that although the construct of style would lead us to expect increasing preference for a particular categorizing mode with age, such has not been the case (cf. Davis' 1971 study with fifth, eighth, and eleventh graders and college students). Further research is needed on differences among individuals in their patterning of preferences.

Sigel and Coop (1974) reviewed the results of several studies on conceptual style, and in discussing gender relationships they described an earlier study by Sigel, Jarman, and Hanesian (1967):

> Sex differences were found, with boys employing more descriptive-analytic responses than girls, and girls using more relational-contextual ones . . . . Further, people who were high on descriptive-analytic responses tended to score higher on nonverbal IQ tests, learning of concepts and memory for details. Although there were no differences in frequency of particular styles among 4- and 5-year-old boys and girls, the correlates of the styles varied. The boys' analytic responses were related to cautiousness, learning skills, achievement orientation, independence and activity; for girls the reverse held true for most variables; for example, they were found to be low on cautiousness, independence and activity. . . . girls employing an analytic style of categorization are quick responders (but accurate), tend to daydream, and are generally inattentive (Sigel, Jarman, & Hanesian, 1967).

> No sex differences, however, were found with categorical-inferential styles. Persons high on categorical-inferential responses tended to score higher on the Binet IQ test. These results were interpreted as an indication that categorical-inferential behavior may well be a product of conventional socialization experiences in boys and girls (Sigel, Jarman, & Hanesian, 1967). (p. 258)

That there are significantly different patterns of correlations for some, but not all, conceptualizing style responses in children across sex is an intriguing finding requiring further research. It should not be surprising that sex differences do not appear in categorical-inferential responses, which become more prevalent in the middle years of childhood. They are likely to reflect school learning that may impact on the two sexes similarly. However, socialization in the family, as well as in the school, is sex-typed to varying degrees and may relate to the observed differences between the sexes in patterns of correlations through at least three possible routes. First, boys and girls are encouraged to channel their energies differently, using different faculties on different kinds of objects. The child whose propensities are not encouraged, or who is not given access to the kind of stimuli and tasks that are appropriate to those propensities, may direct his or her energies into less desirable pursuits or may not make active use of them, i.e., day-dreaming. Second, these forms of conceptualizing may relate to the child's acceptance and/or acquisition of societal sex roles that differentially encourage the use of these styles. Third, a correlated characteristic, like intelligence, is interacting with sex or sex-role and is related to these behaviors. In any case, as is often true with investigations of the correlational patterns of cognitive styles, assessing and labeling the cognitive style seems to have ambiguous meaning across sex. Not enough attention has been directed to understanding rather than simply reporting sex differences in styles and in patterns of correlations; too often the issue is skirted by using single sex samples, usually males.

Nevertheless, in the event that a child has access to the three conceptualizing modes delineated by Kagan and his colleagues (1960, 1963), the basis chosen for a particular set of items is always a function of both the individual's proclivity and the stimulus properties of the objects.[2] Several different types of stimuli have been used in free sort and "comparison-with-a-standard" categorization tasks, and the relative frequencies of sorting rationales for an age group were found to vary with the number and nature of the particular objects presented. This stimulus dependency of the response results in poor within-task and cross-task generality, calling into question both the status of the dimension as a generalizable factor in cognitive functioning considered broadly and the implied superiority of one categorization mode over another as developmentally more mature.

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[2] The rationale given also is a function of the instructions used. Kagan, Sigel, and Denny have all been careful to include both similarity and relational prompts.

Some characteristics of an object are more salient than others because they are extreme specimens of that dimension and, thus, would be picked out generally; some characteristics have special significance to a child because of their highly specific involvement with the individual's particular history. To be of importance, it is not necessary for categorization style, or any other personality or cognitive characteristic, to be consistent across all situations and tasks. But it is imperative that we admit that categorization style may not be a generalized trait and that we then try to specify and explain situational and stimulus variance. It would be quite useful to be able to say, for example, that with familiar animate objects a child responds in a predominantly inferential-categorical manner, whereas when implements are the focus of attention, the child responds in a relational-contextual manner. This does, or can, give educational information about a child because of, rather than in spite of, the fact that the statement recognizes and makes use of the real-world distinctions that people actually make. Moreover, this kind of highly particular information, appropriately specified, could be of help in understanding the development of concepts. In the classroom, sensitivity to a child's presently preferred mode of categorization could clue the teacher that the child's attention must be explicitly brought to bear on certain properties or kinds of relationships between objects for better acquisition and appreciation of those targeted attributes and relationships.

Sigel and Coop (1974) have recommended that teachers keep track mentally of the analytic and global tendencies of their students so as to encourage them, through redirecting their attention, to learn to use different approaches to obtain different kinds of information. They believe, as we do, that styles or modes of information-processing do not have a priori value, but rather are differentially suited to different sorts of tasks, and that it is the responsibility of educators to help students acquire the skills and understandings necessary for success with a variety of problems.

It should be noted that although conceptual style does relate to academic achievement, and in particular, early reading ability, the causal direction or mechanism of this relationship is unclear. Perceiving analytic relations between objects is clearly necessary for skilled reading where fine discriminations of a particular nature are required. However, the fact that a child makes analytic responses on a Sigel or Kagan task cannot be reliably or justifiably used to predict reading performance. Reading performance involves both the ability to make these discriminations and the knowledge of what sort of fine analytic discriminations are required, and the latter is specifically taught. Analytic responses on these measures indicate only that the child can and is willing to behave analytically in these test situations. The low magnitude of correlation between categorization task performance and reading performance at best only suggests similarities in the types of tasks. The child may choose to respond in an analytic fashion because of the training received at school in making discriminations between objects on the basis of their fine details. Thus the analytic response would reflect both the acquisition, as well as the desire to practice or make use, of perceptual skills in school.

The question of domain specificity of response mode is relevant to several style dimensions and their associated tasks. Categorizing styles, cognitive complexity, and risk taking, for example, are styles whose susceptibility to domain specificity has been most clearly demonstrated. Other styles may also be domain specific, but because of the lack of multi-trait, multi-method investigations, the issue has not yet been explored. It should be obvious that if information on these dimensions is to be available for use in the classroom, we need a greater variety of assessment techniques than are now available.

In addition, it would probably be a mistake to consider these conceptual structure characteristics as stable, high-level heuristics generalizable across all content domains and operations for a given individual equilaterally. Obviously, making fine distinctions, looking at parts rather than at wholes, and making rigid classifications are not content-specific processes, but rather are general, basic qualities of information-processing that may be operative in all domains. Asserting this, however, does not imply that the individual performs these operations or is characterized by these qualities to the same degree in all content and stimulus form areas. This, we believe, has been a basic mistaken assumption of much work in cognitive styles as well as in cognitive psychology generally.

The Piagetian concept of horizontal decalage explicitly recognizes that the individual does not operate on the same level of functioning in all areas of performance. As proposed by Piaget, concepts and schemas develop through operation on and manipulation of objects in a specific manner. Familiarity with stimulus materials is an important factor in the meaningful measurement of cognitive abilities and cognitive developmental levels, and is a crucial control problem in cross-cultural research on these questions. Why is it that it takes us so long to recognize that the complexity, refinement, integration, and specific delineation of our understanding of concrete and cognitive objects will also be affected by our familiarity with those objects and the number and kinds of manipulations and operations performed on them?

Most of us recognize that we treat different areas of our experience with different levels of sophistication and rigidity, partly because of training in particular methods of approach to certain areas like politics, philosophy, and plumbing, and partly because of the differential amount and variety of experience we have had with those areas. Nevertheless, in referring to children as analytic (or any other stylistic characteristic), we imply that they do not have our functional complexity and that they do not maintain distinctions between areas of human endeavor, although we recognize that children do have different levels of competence and experience with different content domains. It seems only reasonable to assume otherwise, i.e., that children do respond differentially to different content domains, and that these different responses include stylistic qualities like those under discussion. A fruitful approach to this specificity would be to begin the tedious task of discovering which content domains are responded to in which manner, and then to consider ways of classifying the content domains to expedite the development of educational approaches that deal with the level of specificity in cognitive functioning that truly exists.

If we assume that conceptualizing styles reflect the specific operating characteristics of the cognitive structure that an individual has developed for a particular area, these style dimensions can provide more precise, educationally relevant descriptions of instructional effects than have been heretofore available. The fact that some cognitive styles are relatively mutable and operate on particular domains in a relatively discrete manner suggests a different application to education: as indicators of the success of instruction. If cognitive complexity, for example, apparently increases relative to the familiarity of the material to the student, then this dimension could be used as an index of the student's developed understanding of a cognitive domain or topic. Cognitive structure has been used in this fashion (Ausubel, 1968), but these finely detailed characteristics of relating cognitive objects to each other might provide the behavioral specificity that is so critical for systematic diagnosis and prescription in the classroom. Given specific educational objectives concerning relationships between ideas, rigidity of classificatory or concept terms, level of fine discrimination, etc., students could be compared with each other and with absolute criteria both before and after instruction. The viability and practical feasibility of this plan is obviously at question, but there would appear to be a promise of highly practical educational utility for instructional content-tailored tests using the categorizing task model.

Reflection-Impulsivity

Another well-researched style dimension is reflection-impulsivity. It has been traditionally defined as the willingness or ability to pause and reflect upon the accuracy of hypotheses and solutions in a situation of response uncertainty. As with several of the other response styles reviewed here, it is unclear whether willingness or ability is at issue. Measures of this construct

> generally present the subject with several highly plausible alternatives, only one of which is correct. Thus, experimental subjects (usually children) who respond quickly often err (impulsives), whereas those who pause to reflect on response alternatives are most often correct (reflectives). The most common operational definition of reflectivity-impulsivity includes response time and errors, in cases in which only response time is used for this purpose, it is presumed that longer response times are associated with fewer errors. (Messer, 1976, p. 1026)

This style dimension is a good example of the problems created by the isolation of the cognitive styles field from the larger field of psychology. Although there are colloquial and mainstream psychological definitions for the words used to label this style, they differ from those assigned in the cognitive styles field. For example, "impulsivity" in the general psychological sense is frequently assessed through measures of activity level or ability to delay gratification, but performances on these measures are generally not highly related to measures of the cognitive style reflection-impulsivity such as the Matching Familiar Figures Test (MFFT) (Kagan, Rosman, Day, Albert, & Phillips, 1964). To avoid confusion in meaning, the term "conceptual tempo" has been applied in order to restrict the range of the reflection-impulsivity construct to cognitive tasks. However, this label inaccurately suggests general cognitive-perceptual speed and, while this is no doubt involved in MFFT performance, the crux of reflection-impulsivity is its focus on the child's ability to control his or her response in a situation of response-uncertainty.

Although many measures of this cognitive style dimension have been and are used, the MFFT is by far the most frequently used in research studies. Different forms are available for preschoolers, school-age children, and adults. It involves the simultaneous presentation of a figure with 4, 6, or 8 choices that differ in one or more fine details. Two scores are computed: time to the first response (latencies) and number of errors. As reported by Messer (1976), "all studies with the MFFT but one report a negative correlation between response time and errors, with a median of about -.48" (p. 1027). In any given sample, the person who is above the median on response time and below the median on errors is called reflective; the person who is below the median on response time and above the median on errors is called impulsive. The logic behind this distinction was to "differentiate between those whose fast response times are maladaptive because they are associated with errors, and those whose fast response times are accompanied by fewer errors and are, hence, adaptive" (Messer, 1976, p. 1027).

Test-retest reliabilities in four studies with 6- to 10-year-old children on identical versions of the MFFT ranged from .58 to .96 for response times and from .39 to .80 for errors. Because of the special nature of the samples, procedural irregularities, and the use of the same rather than equivalent versions, these studies may not accurately represent true MFFT reliability, given unkown variation in response uncertainty. An internal consistency reliability coefficient of .89 for response time was reported by Block, Block, and Harrington (1974) and by Ault, Mitchell, and Hartmann (Note 5), but reliabilities of .62 and .58, respectively, were obtained for errors. Consistent with these findings, V. Shipman (Note 6) reported coefficient alpha reliabilities for a large sample of predominantly economically disadvantaged 3 1/2- to 4- and 4 1/2- to 5-year-olds of .90 and .91, respectively, for errors and .70 and .71, respectively, for latencies. In examining findings on stability, Messer (1976) reported, "Among preschool children MFFT errors are moderately stable over time, whereas response time is not stable. By contrast, among school-age children, response time is moderately stable over time but errors are not" (p. 1029). Response time appears to have a different meaning for preschool and school-age children. For the young child, when there is a delay, it is usually for reasons other than to check one's answers (e.g., not understanding the task directions). The lower correlation obtained with errors also suggests that response time is not as reliable an index for this group. Shipman, for example, in the first year of her study found no evidence for a reflection-impulsivity dimension. Instead, there was evidence for consistency in response tempo that was not associated with competence of performance.

Kagan et al. (1964), in the original formulation of the construct, included the proviso that the style must be assessed by a task with response uncertainty, which is important for both evaluating the meaning and applicability of the construct. MFFT latencies do correlate substantially with latencies on a large number of tasks involving response uncertainty, and this provides evidence of quite satisfactory construct validity, which is reported infrequently among cognitive styles. Yando and Kagan (1970) constructed ten different matching familiar figures tests, each with a different number of variants, and administered one a week to seven-year-olds. The median correlation for response time over ten weeks was .73 and .68 for errors. Response times with a geometric form (the Design Recall Test) were moderately correlated with MFFT response times, as were response times on Raven's Progressive Coloured Matrices (Hall & Russell, 1974; Kagan et al., 1964; Kagan, Pearson, & Welch, 1966). For a sample of predominately low-income, 8 1/2- to 9-year-old children, V. Shipman (unpublished data) has also obtained moderate correlations among latencies on the MFFT, Raven's Progressive Coloured Matrices, Children's Embedded Figures Test, and the Sigel Picture Categorizing Test.

Reflection-impulsivity also appears to extend to tasks where the alternatives are self-generated, as reflected in the following correlations: .45 with latency to first question asked in a "twenty-questions" task (Denney, 1973); .30 and .38 (boys and girls, respectively) to open-ended questions about interests (Kagan et al., 1966). Messer (1976) considers the majority of reported low and nonsignificant correlations with other tasks to reflect the importance of response uncertainty and task involvement in the multiple-choice decision situation. He also believes that, while the construct is moderately robust, the specific problem contexts of tasks clearly operate to keep intertask correlations moderate.

In assessing group differences, Messer (1976) in his review reported the following relationships with socioeconomic status:

> Lower-class children from 5- to 12-years-of-age are consistently more impulsive on the MFFT, as measured by both response time and errors, than are comparable samples of middle-class children (Heider, 1971; Mumbauer & Miller, 1970; Schwebel, 1966; Weintraub, 1973; Zucker & Stricker, 1968). However, in a sample of 5-year-olds in which MFFT response time and errors were highly correlated with IQ, the relation of social class to reflection-impulsivity disappeared when IQ was controlled (Mumbauer & Miller, 1970). (p. 1041)

In the ETS Longitudinal Study of Young Children and Their First School Experiences, V. Shipman (Note 6) found that while the number of errors on the MFFT was significantly related to SES, with 3 1/2- to 5-year old children from higher socioeconomic status families making fewer errors, little or no relationship with SES was found for latencies. The expected negative correlation between response time and errors, however, appeared earlier in those children from higher socioeconomic status families. Given the low but generally significant correlations found between IQ and both reflection-impulsivity and social class, IQ would seem to be an important variable to control for in studies of this kind. Noting that class differences in a variable disappear when controlling for a third variable does not, of course, alter the fact that the class difference exists and that it may require attention. While the relationship between social class and reflection-impulsivity is not strong enough to permit individual prediction, it does suggest that lower-SES students will probably profit from instructional and class management strategies that adapt to students' impulsive cognitive strategies.

The data have generally revealed nonsignificant sex differences on this style dimension; when differences have been evident, females have appeared slightly more reflective. Several studies also suggest that the correlational pattern among latencies, errors, and IQ is slightly different for girls than for boys. However, since these studies are not consistent in the direction of their results, and correlations have varied so widely across elementary school grades and across specific studies, it is difficult to evaluate the findings.

The differential response times and errors of those labeled reflectives and impulsives are understood to relate to differences both in evaluating hypotheses and in the amount and efficiency of information-gathering. Kagan, Pearson, and Welch (1966), Sigelman (1969), and Drake (1970) all found that reflectives, as identified by latency and error scores combined, looked longer and more often at all figures than impulsives. Moreover, Drake (1970), in an eye-movement study, found that those classified as reflectives made more comparisons of homologous features of two or more figures, and it is precisely this information-gathering skill that is crucial to success on the task. However, since these are less than perfect relationships, differences in latencies among individuals need not reflect exclusively less comprehensive information-gathering or consideration of alternatives, but could reflect slower processing, distractability, prolonged (but less systematic) deliberation over possible responses, anxiety over errors, or different evaluative standards for "sameness." These alternatives seem less plausible when latencies and errors are strongly correlated and almost all individuals can be assigned to either the "reflective" or "impulsive" group. That is, if taking more time to respond results in less errors, it would appear that the "extra" time is being spent efficiently relative to the task. However, when latencies and errors are not substantially correlated (as, for example, with preschool-aged children), and, therefore, a sizeable portion of the sample does not fit into the two style groups, the meaning of the test performance (and the advisability of dichotomizing the sample) must be reevaluated.

Part of the meaning of a particular task performance--construct validity--can be inferred from the pattern of correlations with performance on other tasks. As might be expected, moderate correlations with reflectivity have been obtained for motor inhibition in preschool children, and for analytic conceptual style and field independence in school-age children, the latter no doubt partly a reflection of the response uncertainty that is characteristic of the standard measures of these styles. Moreover, the EFT and MFFT both require scanning and analysis of a visual field. In his review article, Messer (1976) reported:

> Under instruction to respond slowly, children produced more analytic responses than they did when instructed to answer quickly, leading Kagan and his colleagues to conclude that conceptual tempo is one prerequisite of analytic responding. Ostfeld and Neimark (1967) and Zelniker, Cochavi, and Yered (1974) confirmed this finding for children who were initially nonanalytic. In the case of children previously classified as analytic, however, forcing them to respond quickly did not diminish their tendency to respond analytically. It may be that once an analytic style is well established it is maintained under conditions of forced fast responding.
>
> Several investigators, however, have failed to replicate the relationship between analytic responding and reflectivity (Block et al., 1974; Denney, 1971, 1972; Wyne, Coop, & Brookhouse, 1970). (p. 1033)

The correlation between MFFT and EFT performance is consistent with the different concept attainment strategies reportedly used by field-dependent and field-independent persons.

Because errors decrease and latencies increase with age (i.e., children become more "reflective") in much the same fashion as analytical and disembedding responses increase with age, this combined score on the MFFT could simply reflect general cognitive (or test-taking) maturity. With respect to this question, it is interesting to note that during childhood the correlation between latency and error increases with age, although the correlation between MFFT errors and IQ is quite variable (_r_'s of .00 to -.75). As Messer (1976) has suggested:

> When the content of an IQ test is primarily nonverbal and the format requires decisions about alternatives (multiple choice), correlations of MFFT response time to IQ are higher than when the test calls for verbal responses, especially to items with minimal response uncertainty. . . . One way to view these data is to conclude that reflection-impulsivity overlaps with some components of intelligence tests, particularly those that are multiple choice and nonverbal, and, hence, that IQ may account for many reported relationships between reflection-impulsivity and other variables such as problem solving. . . . Alternatively, one can conclude that performance on nonverbal parts of intelligence tests is influenced by conceptual tempo. . . . (p. 1036)

While latency is easier to conceptualize as a stylistic aspect of functioning than is error--which implies efficiency of functioning (or ability)--latencies and error are usually moderately related and therefore the stylistic component must influence the efficiency of functioning. Thus, although longer latencies as a style give an advantage to the child responding to a high response-uncertainty task like the typical group intelligence test, it is extremely difficult (if not impossible) to determine with any confidence whether the reflective child should be considered more able than the impulsive child. (Of course, on a speeded task, the more reflective child may be hindered by his or her style, and, again, decisions about ability differences may be wrongly inferred.) Since MFFT errors are, more often than not, more strongly related to IQ than to response times, efficiency of functioning (or skill in determining and performing the targeted comparisons) is clearly implicated in reflective performance on the MFFT.

The child's concern over the quality of his or her performance may be crucial for reflective performance and may indicate ego involvement and/or anxiety over failure. The relationship between anxiety and performance on this dimension, however, is a complex one. "It may be that reflectives possess anxiety associated with uncertainty over making mistakes on intellectual tasks (Messer, 1970), whereas impulsives are anxious over a basic inability to perform with competency on any task (Block et al., 1974)" (Messer, 1976, p. 1039). Earlier, Kagan and Kogan (1970) had suggested differential competence motivation for children who differed on this dimension. They viewed the impulsive child as possibly regarding speed of response as an indication of competence, thereby making him or her anxious over responding too slowly and unable to concentrate on the problem. Reflective children, however, might regard absence of errors as a measure of competence, thereby making them anxious over being incorrect and thus slowing them down. Kagan and Kogan also suggested that these differences in task definition may have antecedents in the child's early upbringing. It was posited that the emphasis for reflective children may have been on the inhibition of inappropriate behavior, leading to preferences for errors of omission, whereas impulsive children may have experienced reward for success, providing impetus to appear competent by acting quickly.

Numerous research studies have tied reflection-impulsivity to educationally relevant variables. Reflectives consistently perform better on a variety of moderately difficult perceptual and conceptual problem-solving tasks, making more mature or correct responses on matching-to-standard, serial learning, visual recognition, concept attainment, Porteus maze, analogical reasoning, and "twenty-questions" tasks (Messer, 1976). There is evidence to suggest, however, that impulsives only do poorer when low-salient discriminations are relevant for solution (Hartley, 1976). Consistent with this hypothesis, impulsive children correctly chose one of a pair of stimuli based on a single clue faster when the stimuli had many dimensions. In agreement with the typical findings obtained, reflective children solved the task more quickly when stimuli comprised only a few dimensions (Rollins & Genser, 1977). In the multidimensional situation a strategy of attempting to test the relevance of each possible cue was not possible. Relative to classroom behavior, reflective 4- and 8-year-old children have been found to sustain play longer than impulsives (Campbell, 1973), and analytic-reflective school-age children have been described as more attentive and less distractible (Kagan et al., 1964).

> Impulsive school children are rated by teachers as equal to reflective, slow-inaccurate, and fast-accurate children in motivation to learn, as less attentive than reflective but equally attentive to fast-accurate and slow-inaccurate children, and as more hyperactive than reflective and fast-accurate children but similar in this respect to slow-inaccurate children (Ault et al., 1972). (Messer, 1976, p. 1040)

In other studies, boys with more severe learning disabilities have been found to be more impulsive than those with moderate and mild disabilities; impulsive children are overrepresented among grade-repeaters, reading readiness classes, those with higher oral-reading error scores, and those with diagnoses of hyperactivity or brain damage.

> Further support for the importance of a reflective attitude in reading proficiency comes from a study by Egeland (1974) who found improved reading comprehension among second-grade impulsives from inner-city schools five months after employing a training procedure that successfully increased their reflectivity. These data suggest that an impulsive tempo is one factor contributing to poor school performance whether it is labeled as general learning disability, school failure, or a reading problem. (Messer, 1976, p. 1043)

These findings, of course, may reflect the predominant orientation of instruction to a reflective style and its correlates.

We have very little evidence on whether the latency score contributes to academic achievement beyond that contributed by the error score. One reason for this lack of information has been the use of analysis-of-variance statistical procedures rather than simple or multiple linear regression. The use of this statistical model derives from identification of reflectives and impulsives by whether their error and latency scores are above or below the median, thereby creating two groups of people from a continuum of scores. However, because of the artificial dichotomization, this procedure causes reduction in the sample size (as fast-accurates and slow-inaccurates are dropped from the analysis) in addition to loss of statistical power through reducing interval data to the categorical (nominal) level. Thus using the ANOVA technique on these data has masked the relationships of the combined score, as well as the latency and error scores, with other cognitive and educational performance variables. The reader is referred to Ault et al. (Note 5) and Block et al. (1974) for further discussions of this issue. As mentioned before, the use of the separate scores in correlational studies is becoming more frequent, and multiple-regression techniques would seem to forecast even more useful results in the future. Similarly, the question of how developmental maturity or developed ability enters into the relationship between reflection-impulsivity, reading level, and other school success variables cannot be properly addressed until the compound nature of the variable is included in analyses.

If the construct reflection-impulsivity is understood as reflection upon the accuracy of hypotheses and solutions in a situation of response uncertainty, assessment tasks must be of moderate difficulty for the target population and, as a result, errors and latencies should be highly correlated. It would be helpful for construct definition if standardized measures other than the MFFT were available using formats substantially different from this match-to-standard task. As with the other styles, scores on the standard task ought not to be used for prescription and classification purposes until the influence of test format and content on task performance is better understood. It is not sufficient for construct validity to show that latencies on the MFFT are significantly related to latencies on other multiple-choice tests, or even on constructed response tests. What is needed is to show at least moderately high correlations with tests that differ from the MFFT on systematically controlled dimensions of content and format. If rank on latencies is only relatively stable for match-to-standard visual tasks, the construct should be redefined to indicate this specificity.

Like the style dimension field dependence-independence, reflection-impulsivity is also generally conceived of as bipolar, with one pole more developmentally mature than the other. Latencies increase and errors decrease with age, and they are generally correlated. Aside from the tendency toward poorer reading performance mentioned above, there are other educationally relevant variables with which to be concerned. It is likely that impulsives are disadvantaged on moderately difficult multiple-choice tests. Their quickness to respond may deny them the opportunity to increase their chances of success on difficult items by eliminating certain alternatives. As a test-taking characteristic rather than as an index of ability, this could have broad consequences in underestimating both knowledge and ability and in overestimating the relationship between ability and a reflective attitude. But this, too, is a question for further research.

Given the relevance of this dimension to school performance, an increasing number of attempts to alter the impulsivity of children's responses to the MFFT have been reported in the research literature. According to Messer (1976), "the most potent way to make impulsives more reflective seems to be to teach them improved scanning strategies while having them verbalize what they're doing. . . . Parents or teachers who help develop a concern about accuracy also foster reflectivity" (pp. 1047-1048). Getting children to delay responses has also proved effective (for example, Denny, 1973). In his recent review of studies training children in self-control strategies, Pressley (1979) reported that strategies designed to modify children's perception of incoming stimuli produced more controlled behavior. Since attention is an important determiner of self-control, children's self-control and performance could be affected by external manipulations designed to change aspects of the environment to which children attended. Differentiation training (i.e., taking a differentiation familiar figures test) to attend more to distinctive features of stimuli has been found to be particularly effective for improving visual discrimination performance in young children. Although the results of these intervention efforts that attempt to train children in particular cognitive strategies appear promising, as Pressley (1979) pointed out, most of these studies have been limited to laboratory settings. We need to look at long-term effects in natural settings such as the classroom. Moreover, much work needs to be done to determine if children can be trained to spontaneously use such strategies in new situations.

Common Issues

The most pervasive problem in the cognitive styles field is that the concept of cognitive style, in general and in particular, has been poorly defined. As relatively recent additions to psychology's collection of constructs, they have not yet been integrated as a whole into any of its dominant theories, nor has a new theoretical system been developed to accommodate them. Boundaries between the construct "cognitive style" and other constructs (e.g., abilities and affective responses) are fuzzy, particular styles are incompletely distinguished from others, and distinctions between definitions of the construct and its mode of assessment are not consistently maintained. A central influential, if not causal, factor in this definitional problem is the way in which styles were originally identified and formulated. Researchers' attention was drawn to some as they operated to produce individually stable kinds of error in cognitive-perceptual tasks with predetermined "correct" responses. Other styles evolved out of personality research, and still others from investigations of the development of conceptualization. To some extent, hybrid psychological phenomena from disparate research trends have been collected under the miscellaneous label of "cognitive style." Thus the identification of styles came before the formation of a theoretical structure about the nature of cognitive style, with the resulting diverse conceptions of the boundaries and functional relationships for the construct as a whole.

> The proliferation of cognitive styles in the psychological literature has proceeded rapidly, as investigators explore the area from diverse theoretical vantage points and with a variety of techniques. As a consequence, the field has definitional problems, for investigators of different theoretical persuasions have sometimes been led to identically labelled constructs whose measurement operations are decidedly different . . . (and vice versa). . . . At a higher level of generality, a diversity of labels has been introduced to describe the basic cognitive structures and processes under study. One finds references to such terms as cognitive styles, cognitive control principles, cognitive strategies, and modes of information-processing. (Kogan, 1971, pp. 244-245)

Another historical fact that creates problems for the cognitive style field is that particular styles generally have a single assessment task associated with them as the standard operational definition. In the 1950s and 1960s a few researchers explored a variety of styles, patterns, and dimensions of behavior as possible candidates. Gardner (cf. Gardner & Moriarty, 1968), Witkin, and Kagan developed ingenious measures that stirred a flurry of interest for a while. For various reasons (including lack of fit with the construct definition) few of these were pursued, and only a few of the originally identified styles are still being worked on and with today. The result has been that without broad research interest and a variety of investigators and resources involved, particular single measures of styles developed by the earliest or most predominant researcher in that style area have been accepted, often without rigorous test, as the index of that style. The most serious problem with this approach is that, as with the construct of intelligence, there is often some confusion as to which is which. Some of the constructs are identified as much (or more) by the response to a particular test as by a developed theoretical understanding of the phenomenon under investigation. For example, field independence is identified as an error score on the Embedded Figures Test that is below the median for one's peer group, and that score is then employed to generalize to behaviors in broadly differing contexts as if it were not a measure of field independence solely in the context of geometric figures. To complicate matters, this confusion of the construct with its operational definition contributes to the definitional problem for the general construct of style. If the construct definitions of specific styles were more sharply developed, it would be easier to tackle the larger definitional problem for cognitive styles in general.

The general definitional problem in the field and the overdependence on single measures for most styles have combined to create, or at least exacerbate, several important issues in the cognitive styles field. These revolve around two main concerns: the relationship of styles to the cognitive and affective domains, and the generality of particular styles across tasks and domains.

Relationship to the Cognitive Domain

In examining the relationship of styles to the cognitive domain, the concern over whether styles would be more usefully considered as differentiated abilities or strategies is central. It should be recognized, however, that this issue cannot be resolved satisfactorily except by reviewing each stylistic dimension separately on this question. The way in which particular styles have been operationally defined largely influences the approach taken. Kogan (1976) provides a useful concise summary of his (1973) classification scheme for cognitive styles on the basis of their proximity to cognitive abilities, via their mode of measurement.

> Type I is closest to the ability domain, for performance on the operational index of the style can be described as more or less veridical. For example, the individual described as field independent is more proficient in setting the rod to the vertical in the rod-and-frame test than the field-dependent person. Because the task requirement is to set the rod at the true vertical, field independence necessarily implies a superior level of performance.
>
> In Type II cognitive styles, the question of veridicality of performance does not arise. Nevertheless, the investigator places greater value on one specific kind of performance relative to another. Typical are the conceptualization styles. . . . In this case [Type III], considerations of veridicality are again irrelevant, and differential value is not assigned to one or the other pole of the stylistic dimension. For example, a broad versus narrow style of categorization (e.g., Pettigrew, 1958) was initially advanced in largely value-neutral terms. (Kogan, 1976, pp.5-6)

Kogan's Type I styles are being treated as abilities by their measurement operation: people can succeed or fail according to whether they use the approach that is most efficient (if only most efficient in terms of time). The score does not tell us whether the person typically operates in this manner toward stimuli from this or any other domain.

Because problems with a preferred solution tend to have one best approach, measures with only one correct response assess the individual's ability to recognize that a particular approach is most appropriate, and to assess whether or not the skill required by that approach is readily accessible to the individual. This is especially true when the task has a time constraint. When this type of problem is used to measure cognitive style, then from an individual's performance one can only discover if the style (i.e., approach) is in her or his repertoire, and if she/he is adept in using it. This point can be made in general for "style" criterion measures which have a single correct answer. Because of their genesis from observed stable error in cognitive-perceptual tasks, several styles might be better viewed as abilities rather than stylistic preferences. For such measures, if the individual understands the task, he/she knows that a correct answer exists, and therefore the task exerts pressure to process and respond in a particular fashion regardless of the person's preferred modes. With this understanding, too, many factors enter into performance that are not a stated part of the definition of a response tendency, including standards of goodness, fineness of discrimination, experience with and understanding of task demands and strategy cues, motivation to perform the task and exert effort for the examiner, anxiety about one's competence, and other ability and motivational factors.

The question of whether stylistic dimensions are value-free and the style-strategy-ability issues are almost completely intertwined, as suggested in the earlier quote from Kogan (1976). To the extent that a particular style is conceived to be the ability to perform a certain action in the presence of a particular task demand, the style (e.g., field independence, reflection, flexible control, etc.) is perceived as a differentiated ability that is found in individuals in greater or lesser degree. Since in this society having more of an ability is generally valued (i.e., anyone is better off if he has more of it), for those styles perceived of and assessed as an ability, one pole is usually more valued than the other. It is recognized, however, that not all unipolar styles are conceived of as abilities and are to be especially valued. For example, although individuals differ in their degree of tolerance of perceptions of apparent movement, such tolerance for unrealistic experiences is generally not considered an ability and, in this society, has little, if any, value placed on it.

One should perceive immediately from Kogan's scheme as presented above that values (implicit and explicit) are tied into the development of both the conceptions of styles and their measurement operations. An important impetus to the study of cognitive styles was the belief that in characterizing cognitive functioning via preferred modes of response, or styles of perceiving, individuals could be characterized in a less globally evaluative fashion than they could be by their possession of abilities. Characterizing persons as being more-or-less able had been criticized as unduly evaluative and value-bound, and, at best, of moderate usefulness in planning instruction. Researchers and practitioners held the hope that by characterizing persons with respect to the person's characteristic styles and modes of cognitive functioning, they would be assessing the "how" rather than the "how much" of individual functioning, and thus would have more relevant information with which to tailor instruction and other treatments. This issue will be examined further in the later discussion of the relationship of style to the affective domain and the generalizability of styles.

The reader should be reminded that in the discussion of the field dependence-independence dimension it was noted that in Witkin and Goodenough's (Note 1) recent reformulation, renewed emphasis has been placed on the bipolar and value-free nature of this dimension. Field independence is no longer equated with the ability to disembed; instead, the ability (or willingness) to cognitively restructure tasks is viewed as but one aspect of this style. Moreover, the behaviors associated with both poles have been shown to have adaptive value depending upon the circumstances. Nevertheless, while a broad understanding of, or perspective on, the diversified nature of potential problems and tasks argues for the value-free notion of cognitive styles, it must be recognized that: (a) certain tasks are considered by a society (and thus its psychological and educational researchers) as more important than others to achieve; (b) measures that resemble achievement tests increase the likelihood that evaluators of test results will presume that proficiency rather than style is being assessed; and (c) persons who are not proficient in the skills required for efficient and successful problem solution in culturally valued tasks are at a disadvantage in that culture. Field independence is associated with success in a wide variety of activities valued by society, e.g., school and professional academic achievement, or retaining an unpopular opinion or judgment. On the other hand, there has been relatively little investigation of the relationship of field dependence to behaviors successful in valued pursuits or activities, e.g., memory for social material or accurate "reading" of social cues. Therefore, we strongly endorse Witkin and Goodenough's (Note 1) position that analytic disembedding and sensitivity to contextual effects and relations be recognized as skills that may be relatively independent; and that they and their development be investigated and encouraged as separate strategies useful for solving different kinds of important problems.

A further issue in examining the relationship of style to the cognitive domain concerns the appropriate interchangeability of the terms style and strategy. It is important to point out that strategies are usually considered relatively consciously planned processing functions or decision-making regularities, whereas styles may be considered predispositions in the absence of compelling reasons to act differently. Individuals differ in the extent of their control over their behavior in response to both internal and external cues, and in their sensitivity, responsivity, and receptivity to these cues. A person must recognize response cues as such and then put into effect the strategy that she or he feels is appropriate. In memory work with children, for example, both production and mediation deficiencies are recognized. A production deficiency occurs when the child does not use a particular strategy for a problem, but it is part of the child's repertoire and it can be used if prodded; a mediation deficiency occurs when the child, even when prompted by the experimenter, cannot use the strategy effectively. Thus we distinguish between having the ability to respond in a certain manner, whether or not one does so in a particular situation, and simply not having that response in one's repertoire. In cognitive style work, short shrift has been made of this distinction, creating the issue of whether particular styles (or even styles in general) are abilities or preferred strategies, i.e., whether one has the ability to respond in a particular fashion or whether one chooses to do so in a given assessment situation. As noted earlier, Wachtel (1968) made this distinction in comparing the term "analytic" as used in describing field dependence-independence and conceptualizing style. It also is important to recognize, as Messick (1976) has indicated, that the distinction between style and strategy has important implications for intervention. Although styles may develop slowly and be relatively immutable, the strategies associated with them may be more amenable to change. One can learn to shift to less congenial strategies that are more effective for a particular task.

Perceiving style as a habitual mode or preferred response implies that the individual also uses this approach when it is not called for explicitly. This should be reflected in measurement by restricting the cues for a particular response, thereby creating a free-response situation. A possible further implication of this conception of style is whether, to be considered a preference, individuals must have alternative approaches in their repertoire from which they can choose a preferred response. This interpretation may require an overly restricted conception of preference, but we raise the point as a caution to those working with styles. It is extremely important, before making attributions about a person's preferred response style, to use methods that logically permit conclusions about the individual's repertoire, rather than about a particular response to a particular situation. One should not proceed on the assumption that the person prefers to respond in a particular fashion until it is apparent that she or he has alternative modes of responding that would also have allowed task solution.

Evident in our earlier discussion of style measures is our as yet unstated pedagogical ideology of training for maximum competence through the acquisition of a variety of strategies and skills. We define optimal competence as having possession of, and ready access to, numerous strategies for approaching, structuring, and transforming problems into tasks; a variety of algorithms (skills and abilities) for coming to solutions; and a number of "tests" for conditions that give indications of which approach-strategies and algorithms are most appropriate given the perceived task demands. This view is explicit in the notion of value-free characterizations of cognitive styles; one end of the continuum, or alternative valence, of a style has no a priori value, but takes on adaptive value under different circumstances.

Given the variety of task demands and alternative modes of solutions available to meet them, styles and strategies ought to be investigated in relation to their appropriateness or efficiency for the particular task requirements, not on an a priori basis. There are at least three diagnostic issues central to the measurement of "style": (a) whether the person can assess a task correctly for the skill or approach best suited to its solution; (b) whether she or he has the functions or skills available for use in this task; and, (c) what approach she or he is most likely to use in the absence of cues for a particular approach. These could be considered questions of strategy, ability, and style, respectively. The first two questions are addressed by achievement-set tasks like the EFT and MFFT, but only if the person succeeds. If he or she does not succeed, it is not obvious whether this lack of success reflects an inaccurate assessment of the task, or the lack of the required response. If the person's preferred response mode or "style" is the assessment objective, we must be careful to control the cues available to insure a free-choice situation.

This kind of task analysis--both what is required to perform a task, and what forms of processing are intended by the construct definitions--should prove useful in counteracting some of the difficulties of definition discussed earlier. Since the emergence of cognitive styles as targets of inquiry, the information-processing movement in cognitive psychology has developed a systematic and fairly well-integrated approach to investigating the interrelationships of perception and cognition. We believe it unfortunate that this movement and cognitive style research have interacted and communicated so little, if at all. The information-processing movement has opened extensive possibilities for comparative work by focusing on the sequential and combinatory units of cognitive behavior. It is readily conceivable that this kind of analysis could be brought to the study of styles, holding promise for investigating questions of multiple components of a style, as well as those of the extent of overlap between styles, leading to finer discriminations as well as needed integration in the field. On the other hand, while cognitive psychology has perhaps more clearly specified the relationships between psychological constructs and behavior with the aid of this approach, it has to some extent underplayed the frequency and quality of individual differences in functioning. We believe that the information-processing approach would be strengthened and broadened by attempts to comprehensively account for these individual stylistic differences in processing and responding.

Relationship to the Affective Domain

In our emphasis so far on the relationship of cognitive styles to cognitive abilities we intended to spark more careful consideration of these important unsettled issues with regard to cognition, not to minimize the noncognitive aspects of styles as they have been defined and measured. We will stress the noncognitive aspects of cognitive style from the perspective that all human behavior reflects various aspects of affect that we can isolate conceptually more easily and with better precision than we can behaviorally. However, there would seem to be two different important kinds of relationships to delineate between cognitive styles and the affective domain: those defined by the construct, and those implicated in assessment.

Cognitive styles are conceived of as high-level heuristics that organize experience for the individual and are seen as "intimately interwoven with affective, temperamental, and motivational structures as part of the total personality" (Messick, 1976, pp. 6-7). This is the most typical understanding of the relationship of cognitive styles to the affective domain. Thus many styles are considered basic characteristics of functioning, applicable across a variety of domains. This conception of style, of course, assumes that the style operates in a variety of situations and on a broad variety of content domains--an issue which we will discuss in detail later.

Field dependence-independence is the style whose relationship to affective functioning is the most fully researched, as we have indicated in the earlier discussion of that style. While assessment of the style is limited to its operation in the cognitive-perceptual domain, this dimension has been found useful in characterizing people's interpersonal behaviors, occupational choice, personal preferences, and memory for social information. Field dependence-independence is considered quite explicitly by Witkin and his colleagues as a fundamental aspect of the organism's typical mode of response to the environment, a preferred mode of response that operates across various areas of functioning. In their recent reformulation, Witkin and Goodenough (Note 1) emphasized both cognitive-perceptual and interpersonal modes of functioning in defining field-dependent and field-independent styles.

Some researchers, eager to show that cognitive style has broad implications for total functioning, have presented "significant" correlations of a particular style with various personality characteristics and affective responses as evidence of this relationship. An injudicious use of this strategy, however, creates severe problems for interpretation and use. Especially with large samples, statistically significant correlations do not signal by themselves important relationships between variables. When little strong evidence suggesting a logic for the relationship is presented, one must be wary of mistaking associated measures for expressions of the same latent variable or function. While systematic investigation of relationships across domains is necessary to validate style constructs, we must be very careful to make it clear that we are not suggesting that the cognitive style variable can be a proxy for these other affective variables.

Another less direct way in which cognitive styles are associated with the affective sphere is simply by virtue of having labels that have affective associations in everyday language (e.g., dependent, impulsive, constricted, narrow). The creation of jargon is to be justly condemned as a strategy for mystifying and thereby making inaccessible a body of knowledge; however, researchers ought to be more careful about the labels given to their constructs because it is often only by their names that people learn about them. The term reflection-impulsivity is a prime example of this problem; both words have many connotations that are not necessarily included as aspects of the construct. Although the assumption is made that slower responders perform better on the MFFT because they are evaluating and weighing response alternatives, this has rarely, if ever, been tested. In fact, there is some evidence suggesting that the more accurate performance of slower responders is due to more careful visual attention to the stimulus materials and the comparisons required, rather than to an evaluative function. If this is confirmed by subsequent investigations, it suggests that the construct should be relabeled because the present term is misleading. More generally, however, the label seems to interfere with the derivation of appropriate applications because it suggests a personality dimension with far-reaching consequences that have not been confirmed by research investigations. Despite one's associations with the words used, the MFFT measure shows little or no relationship with general activity level and is specific to tasks with moderate to high response uncertainty.

Another instance of the relationship of cognitive styles to the affective domain may be seen in the influence of affective variables in the assessment situation itself. In any individual assessment, one must be concerned with the examinee's task engagement and desire to exert effort in performance. This is more often a problem with children than with adults, and it can be monitored reasonably well in an individual testing situation by a well-trained examiner. Although attractive forms have been devised for children for the three styles we have discussed, there is no assurance that a particular form will match a child's interests enough to ensure his or her motivation to engage in the task. Yet some styles by definition (e.g., reflection) require task involvement and sustained engagement. Individual assessment procedures can monitor this effect, but the individual assessment situation itself may affect performance. Some children are more circumspect with strange adults than others are; some require an adult's full attention to activate their motivation to achieve. In either case, any generalization from task performance under these conditions to a "preferred response style" that one might expect to see typically in a classroom must be made cautiously. More attention should be given to the development of observational forms of assessment for styles construed as habits and/or typical responses, and to the use of classroom teachers and others (e.g., parents) familiar with the individual as data-gatherers.

In addition, despite examiner efforts to the contrary, children will differ in the extent to which anxiety is generated by a particular task and by the assessment situation itself. As we indicated earlier in the section on reflection-impulsivity, one's style may result in differential effects of anxiety on performance. According to Kagan and Kogan (1970), anxiety may stem from (a) lack of congruence with sex-role standards in cognitive performance; (b) anxiety over competitiveness; (c) anxiety over peer rejection; and (d) anxiety over passivity. Because of the intellectual nature of most cognitive style tasks, these authors believe that anxiety over competence and performance are always relevant variables controlling the final product.

Another factor, not strictly cognitive in character, that we view as affecting performance on cognitive style tasks is one's internal standard of goodness or completeness. By this we mean an internal gauge as to when one has arrived at an acceptable answer or solution; a sense of what constitutes an appropriate end-point to one's task or activity. This could be conceptualized as consistent individual differences in people's use of approximation strategies or in the fineness of their distinctions. The influence of an internal standard of goodness or completeness is probably most evident and powerful in reflection-impulsivity. In the MFFT, the response alternatives closely resemble the standard figure and only differ from it in relatively fine details. To the extent that a person uses an approximation strategy to solve such problems, any of the alternative choices might be suitable and thus chosen. One can see how this might relate to breadth of categorization; broad categorizers might be more tolerant of small differences and thus be less concerned about finding an exact copy of the standard figure (the intended task). When the examiner asks for the one that is "the same as this one," it is up to the examinee to determine how specifically to define "sameness"-- as "similar" or as "exactly the same." Making this determination relating to the precision of an answer is obviously affected by the wording of the directions, by the similarity of the items presented, and by the person's internal standard of how good is good enough. In addition, this standard will vary with the examinee's motivation to pursue the task, such that less precise answers are likely to be accepted for questions in which the individual has less concern or interest.

Although MFFT performance is most obviously affected by one's internal evaluation standard, we contend that individual differences on this dimension will necessarily affect all tasks involving a correct answer. For example, on the CEFT, the child who quickly locates a triangle in the picture, but one which differs in size from the standard, is incorrect, as is the child who cannot find any triangle in the allotted time. Likewise, on the RFT, some inaccuracy may be due to a differential tolerance for the degree of discrepancy. Again, this factor can be expected to be complexly interrelated with the category-breadth dimension. Although this variable may be difficult to isolate, it should be considered in the interpretation of performance on these other tasks and may be useful in understanding the effect increased anxiety can have on performance on cognitive style measures.

For those styles relating to conceptual structure, additional relationships to the affective domain are evidenced. Meanings and relationships between concepts are clearly developed through inputs from both the cognitive and the affective domains. We might expect those classes of concepts richly imbued with affective associations or meaning to have different salient dimensions for discriminating among them than classes of concepts more affectively neutral, or having different affective associations. Similarly, different classes of concepts might be more highly differentiated and/or integrated than others, given different kinds and extents of emotional involvement. There are some data suggesting that domains of more familiar concepts that are developed from experience are differentially structured from those that are deliberately taught. Thus care should be taken to vary the types of concepts that are presented in conceptual structure tasks by their familiarity and ontogeny of development as well as by their likelihood of emotional involvement. It also should be remembered that these characteristics are usually estimated for the individual as a member of a particular age group in a particular culture. Individual variation in the importance and extent of affective associations with a particular class of concepts could vary considerably, and such variation might not be apparent until these kinds of "cognitive structure" tasks were administered. Perhaps in this realm it is even more important to sample concept domains widely in order to allow reasonably valid generalizability, attempting to minimize the complicating effects of varying extents of affective involvement in investigating cognitive structure.

Of course, individual differences in stimulus association also affect performance on other cognitive style measures. The general motivating influence of task interest has already been mentioned. Specific stimulus associations, however, may have positive or negative impact. On the CEFT, for example, particular affective and semantic connotations may interfere with breaking down pictures of familiar objects into "unimportant" details.

It does not appear very meaningful to try to separate cognitive and affective factors too rigorously, given their acknowledged simultaneous operation and reciprocal influence. However, it does seem possible to define cognitive styles as being primarily concerned with information processing, while also acknowledging their possible linkage to personality variables as they are more commonly construed (Messick, 1976). It is probably less important to keep "cognitive" styles conceptually pure from affective concerns than it is to identify and elaborate the specific components involved in processing information. Similarly, it should be recognized that stimulus characteristics themselves can influence the functions (and choice of functions) brought to bear on the stimuli through mediation by their meaning and affective associations.

Construct Generality

The third major issue to be discussed is the generalizability of cognitive styles. Adequate discussion of this issue requires distinguishing at least four separate aspects--generalizability over time, over tasks, over groups, and over settings. The central question of construct generality is: "How wide is the range of influence of these styles?" In the last section we indicated some of the boundaries and ranges that are apparent for particular styles, but here we intend to discuss more specifically those factors in conceptualizing and operationalizing styles that place boundaries on the extent of generalizability. There will be an appreciable amount of repetition of points made earlier because of the interdependence of this question with those already discussed.

Generalizability over time, or stability, is a basic concern in construct validity. To consider a behavioral response indicative of some characteristic of an individual, one presumes (or attempts to show) that the behavior would be repeated by the individual in an essentially similar situation. The duration of time one expects for response stability is determined by the range of intended use of this information, for example, as for an intervention. To investigate stability over a period of interest we must assume that the stimuli that elicit the expression of a certain characteristic can be sufficiently replicated. Thus generalizability over time requires a certain amount of generalizability over task and context. This point sounds tautological, but bears stating nonetheless because of the difficulty of determining, in the absence of positive findings, whether the lack of stability was the result of change in the person or of an improperly reproduced stimulus situation.

There are several conceivable influences on the generalizability of cognitive styles over time, presuming an adequately reproduced assessment situation. Styles may be subject to normal developmental processes in children and adults, especially if the style resembles an ability or skill that improves with practice or with guidance, or that simply improves or declines as a function of change in general ability or maturity. The distinction between these two types of situations would be difficult to make, assuming the use of complex tasks that are moderately related to general ability, over a period in which both the specific style and general competence are hypothesized to develop.

An interactive view of development introduces additional, more complicated hypotheses. It appears quite likely that particular styles may not be amenable to change or even appearance except as a particular general developmental level is attained. Categorization style is a good case in point. We cannot expect children to use a categorical-inferential mode of categorizing as a "style" until they have mastered this level of functioning and have ready access to the concepts required for this mode of categorizing.

Perhaps the most conceptually and experimentally complicated, though probably frequent, interaction of time and measured style occurs when the behavioral expression of a style changes developmentally in the standard assessment situation. The corollary is the developmental change in meaning of an objectively-defined behavioral response as an expression of style. On a simple level, this is reflected in the common practice of generating reflection-impulsivity scores or classifications from comparison of raw scores to the median for a particular group. It is understood that the number of errors or seconds to response do not in themselves directly or absolutely reflect style, but do so only in relation to the performance of others of a similar cognitive or developmental level. Comparison to peers with closely similar status on other performance-relevant variables theoretically should be the best way of isolating style rather than ability differences in performance. However, the only index of these other variables used typically is age or grade level, and these are notoriously poor indicators of performance-relevant variables such as perceptual speed, spatial ability, or even of general ability or developmental level.

More complex relations than these, however, have been found between cognitive style assessment and age (or development). Although Kagan et al. (1964) found that the percentage of analytic categorizing responses increased with age during middle childhood, Wallach and Kogan (1965) found that creative children gave many more relational responses than did their less creative, but equally intelligent peers. "The array used by the authors did not encourage relational sorts with the consequence that such groupings took on an unconventional free-wheeling quality that appealed to the more creative children in the sample" (Kogan, 1971, p. 265).

Of course, when speaking of age we are speaking of the person accumulating experiences that act to redefine situations and contexts for her or him. We view the individual as a proactive dynamic person who is continually changing the environment as well as being changed by it. These transactions between the person and his or her environment must be accounted for in any discussion of stability. Thus, although we referred earlier to the interaction between time and the person's style "presuming an adequately reproduced environmental situation," this is by no means a safe presumption to make. Exploring the problems in meeting this condition is the focus of the following discussion on construct generality.

Generalizability over particular tasks or assessment situations is a second basic concern of construct validity. In trait theory we are enjoined to provide evidence that what we assess in the measurement situation is a reasonably general characteristic that can bear the weight of our behavioral predictions to a wide range of situations. The general underlying belief that guides explorations of the meaning of a construct (and thus the "determination" of construct validity) is: to the extent that two stimuli are similar, they will be responded to in a similar manner by the same (unchanged) person on two occasions, or by two people with the same status on the attribute. Consequently, for the three style dimensions discussed, a variety of measures have been developed. In some cases, such as the EFT and RFT, these vary widely; in others, for example, the MFFT, only content (e.g., geometric vs. meaningful figures) and/or response modality (e.g., visual or tactile) is changed.

Several problems arise, however, in applying this method of determining construct validity in the cognitive styles field. Not all cognitive styles have been conceptualized as stable latent attributes of the person to the extent that some traditional individual psychological variables have been, e.g., general intelligence and specific abilities. Rather, style variables have usually been identified as either a particular observable behavioral response to a particular stimulus situation (e.g., latency), or as the performance of a particular operation on the stimulus (e.g., leveling). Often, a personological variable is not posited as such. Thus, to this extent, cognitive styles resemble the frontiers of the contemporary move in psychology from using status variables to using process variables as descriptors and predictors of behavior. The task for construct validity, then, becomes (a) to identify the component(s) of the observed behavior that have generalizability across tasks, and (b) to identify the range of tasks to which the behavior can be generalized. As Cronbach and his associates have discussed in their papers on validity and on generalizability (Cronbach & Meehl, 1955; Cronbach, Rajaratnam, & Gleser, 1963), this dual mandate for assessing construct validity creates an iterative process of mutual redefinition between the person variable and the stimulus environment to which we should devote more exacting attention.

A serious problem for examining construct generality is created by the frequent occurrence of a single standard measurement approach for identifying a particular style. Although these measures have multiple items, each item has the same task format that may or may not be eliciting a format-specific response. Sometimes, however, the format may seem to be an integral part of the style definition. For example, reflection-impulsivity is defined as the willingness to hesitate and consider alternatives in a situation of high response-uncertainty. In this case, a multiple-choice format for difficult items is highly consonant with the construct definition, although it does not exhaust the possibilities. In other cases, restricting the assessment instrument to a particular format has yet to be justified on the basis of being the most appropriate or sufficiently generalizable format. With reference to the MFFT, it is not apparent that matching visual figures for their exact replication is a necessary part of the style definition, but without further information, that operation is the only one to which task performance can be justifiably generalized. The moderate correlations with latencies to verbal questions about interests and activities, and to latencies on "twenty questions" tasks, pertain to this issue, since task performances are not as highly related as the style definition would suggest. Thus, although cognitive styles have been claimed to be less sensitive to content variation, differences in levels of skill with verbal and visual material would appear important, just as they are in ability or achievement tests. Although we are not asserting that styles do not have the generality that has been claimed for them, we believe that this generality needs to be explicitly tested and accounted for in the assessment of an individual's style. Again, we repeat that there are serious problems to be encountered in overgeneralizing the concept of style as a fundamental organizing principle. There are strong forces towards establishing basic principles in the social sciences before they have been tested in a wide variety and range of instances, and this can lead to false conclusions and simplistic thinking. Although the field dependence-independence construct has been widely researched, because of the link to psychological differentiation it took some time for the positive aspects of field dependence to be explored to the same degree as those of field independence.

We believe that it is necessary to recognize that the extent to which styles generalize across cognitive domains is affected by the level and pattern of the particular cognitive skills involved. Three approaches could be taken to separate these qualities of cognitive functioning: (a) partialling out skill components that may be confounding style performance scores; (b) attempting to devise tasks that require these skills only marginally; and (c) devising multiple measures of the style to separately assess the cognitive skill/ability domain of interest, thereby generating multiple scores. For at least some styles, it appears impossible to devise tasks that do not involve cognitive skills on which people differ relatively independently of how they vary on the style dimension. If it is not feasible to provide the necessary training and practice to equate skill levels, the choice between the other two methods should probably be decided separately for each style depending on the kind of relationships with specific skills discovered by further research.

Significant progress has occurred in identifying the components involved in stylistic behavior--for example, Goodenough's (Note 7) research on dimensions contributing to the rod and frame illusion--but new advances cannot be made without more careful consideration of task qualities. The most critical obstacle to the investigation of relevant task qualities is the lack of appreciation for the fact that relevant task qualities are those that are salient to the responding individual. It is axiomatic that only similar stimuli will be responded to similarly, but the gauge and criteria for similarity also include person variables, which we have only begun to explore.

This issue is essentially a question of whether the meaning of stimuli can be generalized across individuals. Styles could be conceptualized as relatively stable responses to particular stimuli configurations which offer similar cues to the person about appropriate responses. Thus, to the extent that the cues in a particular situation are read as similar in two different situations, we would expect a similar stylistic response from the individual. However, the cues that people use have not yet been identified and could conceivably have developed quite idiosyncratically from the person's particular learning history. This uniqueness in development of selective attention may affect both how and what cues are read in a complex situation through, for example, a cue more or less having salience for a particular individual. One can only expect an individual to respond similarly to situation B if he or she perceives it as similar to situation A, which is irrelevant, in the final analysis, to how similar an external observer perceives the two situations. This makes it difficult to determine what criteria to use to identify appropriate tasks and contexts for assessing construct generality. Research does not generally take into consideration as strong an application of the individual differences model as this, but, for experimental and conceptual manageability, assumes that those persons of a similar developmental level in the same culture have developed their concepts and cognitive processes in a manner similar enough to allow combining data for analysis. Although we sympathize with this concern and recognize practical exigencies, we are concerned here explicitly with the consequences of individual differences in perception and cognition. We believe, for example, that extending this conception of individuality into the development and processing of stimulus cues may help explain the frequent sex and cultural differences found in cognitive style research as well as in other areas. Our untested hypothesis is that systematically different learning histories assume an important role in the systematic differences in perception and cognition that have been uncovered by cognitive style research.

An additional factor to be accounted for in assessing perceived task similarity is the personological variable of self-consistency. This variable appears related to both the category width and conceptual structure variables. Kogan (1971) emphasized that one of the most important conclusions of his research on risk taking was that generalizability across tasks is an individual variable itself, leading, for his sample, to low or moderate correlations across risk-taking tasks. Witkin and his associates recognized situational variance in the degree to which a field-independent style is used by an individual in a particular situation, noting that the field-independent person need not function field independently at all times, and recently introduced the term mobility-fixity to refer to this variability in style expression (Witkin & Goodenough, Note 1). Inevitably, some people are going to be less likely than others to perceive/conceive of a particular set of situations as similar. However, without knowing the basis on which a person "decides" to use a particular response style, we have no basis for determining a priori the similarity of tasks except on a simplistic, physical, so-called "objective" level. Therefore, we recommend more research on the person's conception of the task and its demands, as well as on the specification of the style behaviors themselves.

Generalizability over context is similar to that for tasks in that many of the same principles about similarity as "being in the eye of the perceiver" also apply here. By separating context from task, we wish to emphasize this point further by drawing attention to the macroscopic environment in which assessment takes place. Like the concept of task, context ordinarily refers to an objectively describable stimulus configuration that we expect to influence individual behavior. However, the objective description is actually being used as a proxy for what most behavioral scientists would agree is really the target information: the psychological environment of the individual. It is the subjectively, not the objectively, defined context that is presumed to affect behavior by providing cues, for example, to what others consider appropriate or expected behavior, or to those supports, resources, or obstacles to goal-directed behavior that are present.

To design interventions we hypothesize reasons for observed responses, and context information is crucial to this attributional process. Again, extensive generalizability is not the goal of construct validation, rather, determining the range of generalizability for diverse groups, as well as for individuals, is one goal of examining construct validity. Finding that children use different response styles when in different contexts (e.g., at home vs. in Ms. Smith's class) provides clues for research on the variables that influence the use of style; a basic unanswered question about cognitive styles. Moreover, once we learn that, as for some styles, the level of anxiety influences the use or expression of a style, it is imperative that when an individual's style is assessed, the level of anxiety and any other confounding variables are also assessed or manipulated to create standard assessment conditions. Although these recommendations have been made by others for achievement and ability assessment, we believe that the already apparent psychological and situational complexity of style expression demands that these contextual issues be addressed directly.

In addition, psychosocial contextual information is crucial to addressing traditional construct validity questions because certain circumstances can change the nature of the task for the individual. A child might hesitate to respond on a timed task because of fear of strangers. We might erroneously conclude from such a reported latency that the child hesitated in order to evaluate his or her response conscientiously or to examine the stimuli more carefully.

From the preceding discussion it should be clear that we believe global "objective" descriptions of contexts, like "home" or "classroom," are poor proxies for the kind of detailed information on the psychological environment that we consider essential. However, until an adequate taxonomy of situations is developed for common use, we would like to see at least more personal situational information gathered in style assessments, as well as more research on the extent to which style expression varies for an individual across natural and laboratory settings.

Before concluding this section we wish to remind the reader that the various theorists referenced in this chapter have been careful to point out that the bipolar nature of some styles does not mean that people are separated into two distinct types of human beings. They emphasize the fact that persons differ in the relative degree to which they evidence the behaviors associated with either end of the dimension. There is an unfortunate tendency, however, among many researchers as well as laymen, to dichotomize variables, and thus populations, and then gather lists of adjectives for each pole, despite lip-service to the notion of continuous variables referring to a continuum in the population. Moreover, little attention is paid to the fact that often one is referring to extremely small differences in response (e.g., fractions of seconds for latencies). Obviously, without broad, multivariate, multi-trait-multi-method research on large, widely representative samples, we are doomed to creating lists of the correlates of a variable without understanding the nature of these relationships. By an injudicious gathering of correlates, not yet validated characterizations of individuals and groups accumulate. For example, when we report such results as "impulsives are overrepresented in a sample of poor readers," we want to be careful not to lead readers to conclude that impulsives are poor readers and/or that poor readers are impulsive. Although researchers cannot be clearly faulted for the fact that readers may draw inappropriate conclusions from the data, the fact that it happens regularly should make us all the more careful to spell out the intent and implications of our research lest they be misconstrued.

Concluding Remarks

In this chapter we have described some of the current conceptions and findings regarding cognitive styles--those dimensions of behavior that reflect consistencies in the manner or form, rather than level, of cognition. In view of the relatively rapid expansion of the research literature in this area during the past decade, rather than attempt a brief sketch of all the relevant topics we compromised by examining a few in detail. We chose for detailed discussion three distinctive cognitive styles currently being studied by both researchers and practioners, i.e., field dependence-independence, reflection-impulsivity, and conceptualizing/ categorizing modes. In addition to those conceptual and methodological issues particularly pertinent to these styles, we included a discussion of issues common to all--the relationship of cognitive styles to the cognitive and affective domains and the generalizability of styles across time, tasks, and settings. At this point we would like to reassess where such examination leads us. Are cognitive styles useful descriptors of individual differences in behavior for improving educational practice? In attempting to answer this question, various implications for educational research and development and for the design and management of learning and teaching transactions will be discussed.

It is quickly evident in reviewing any proposed list of style dimensions that the modes of perceiving, remembering, thinking, and problem solving currently identified as cognitive styles are exceedingly heterogeneous and lack a common definition. As relatively recent additions to the psychological literature, these constructs have not been integrated as a whole into any of its dominant theories nor has a new theoretical system been developed to accommodate them. Having originated from the psychology of individual differences, ego-psychology, and experimental studies of cognition, the concept of cognitive style reflects both the strengths and weaknesses associated with such a diverse background. As constructs, different styles vary widely in breadth of domain, level of specificity, unidimensionality, and in their distinct differences from abilities and skills. Moreover, although the originators have always clearly separated the constructs from their measures, the particular measurement strategies used as indirect indices of these constructs have frequently provided additional sources of confusion. Like the construct of intelligence, a number of cognitive styles are most directly identified by what a particular task measures, rather than by a theoretical understanding of, or perspective on, more general information-processing characteristics. Some of the more serious problems in the measurement of these styles include the following: (a) instruments designed for different areas of functioning, for example, personality and perception, (b) achievement or maximum ability set or format, (c) confounding with other styles or abilities,

(d) lack of reliability and/or stability, (e) unexplored or poor cross-task generality, (f) limited variety of assessment procedures, and (g) elaborate and expensive instrumentation. These measurement problems limit what we can assert about the breadth and stability implicit in the definition of styles. For most of the styles listed, further research and development efforts are thus essential before such measurement can be used effectively for teaching/training.

Interspersed throughout the chapter we have included suggestions for future research and development activities. In our view, some of the most needed research should address the origin and development of particular styles and their expression (for example, the extent to which they reflect differential learning histories and/or biological predispositions); the delineation of personal and situational factors affecting performance on different cognitive style tasks; the relationships among the various styles; and the extent to which these findings are consistent across diverse groups. It would appear critical that prior to interpreting performance on those tasks purported to assess cognitive style, other factors contributing to performance internal and external to the individual be delineated. Such work is proceeding. For example, Goodenough (Note 7) has undertaken a programmatic research effort to determine those perceptual dimensions contributing to the rod and frame illusion and performance on embedded figures tasks. Included in future research plans is the determination of those processes that contribute to comparability in performance across these tasks. Also, a conceptual framework that delineates styles according to an information-processing sequence (e.g., cue selection, decoding, retrieval) might foster differentiation of a particular style from other styles and abilities and provide a basis for explaining differential relationships among styles. Intervention strategies assume an understanding of the factors contributing to an individual's performance. Although a process orientation is emphasized in describing cognitive styles, we must be alert to the fact that the behaviors being observed/recorded are themselves a complex composite of many processes and skills. There is not a simple link between the response and the prescription. Training a child to scan a visual field better may not improve his or her accuracy in finding an identical matching figure on the MFFT when what is required is appropriate feedback on the meaning of "same" or a reduction in his or her general anxiety over competence.

Research is needed to determine the factors that affect the mutability of styles (and a related topic, differences in self-consistency as a function of organismic and/or task demands), and the effectiveness of different training procedures and classroom practices for facilitating the use of teaching and learning strategies not congenial with one's style. Messick (1971) has suggested that if styles are relatively immutable, it may be necessary to focus attention on the early years and attempt to foster mutable modes of cognition before particular styles crystallize and become predominant. In a more recent paper (1976), however, he also distinguished cognitive strategies from styles. Styles, as high-level heuristics that organize lower-level strategies, function in part as controlling mechanisms. As our review indicated, basic information-processing strategies can be modified. With appropriate training, individuals may learn to shift to less congenial strategies that are more effective for the particular task than a preferred one. Present findings suggest, however, that such training must also provide knowledge of when such strategies are applicable, so that individuals can generalize them to new situations. Further research is also needed on the relationship of cognitive styles to abilities. Although conceived as purposely distinct, cognitive styles are clearly involved in the deployment of abilities. In addition, styles may serve as predispositions for developing certain abilities since they may offer a relative advantage for doing so given certain encouraging environmental interactions.

In the development area, we need to determine preservice and inservice strategies for effecting teacher sensitivity to these individual stylistic differences and for facilitating the adaptive use of multiple alternative instructional strategies. Witkin et al. (1977) have suggested that by sensitizing teachers to the implications of their own cognitive styles and those of their students for the teaching-learning process we may increase teachers' adaptability. The existing knowledge base concerning learning strategies and particular instructional approaches, however, is limited. Further work is also needed on differences between teachers' preferred and observed teaching behaviors in actual classroom situations. The development of classroom materials reflecting the diversity of children's stylistic preferences also should be encouraged, as should the development of a greater variety of assessment procedures including more feasible measures such as paper-and-pencil forms suitable for group administration.

In our discussion of construct generality, we indicated the need for the development of an adequate taxonomy of situations/contexts as they impact on the individual. We need to determine the actual functional properties of environmental stimulation. The "same" treatment may have different meanings and as a result call forth different strategies. An unstated assumption throughout is the continued need for both laboratory and field research with, it is hoped, increased intercommunication. Training studies, in particular, have been primarily limited to laboratory settings. We need to investigate long-term effects in natural settings such as the classroom.

Such research and development should be strongly encouraged. We agree with Messick (1971) that because cognitive styles comprise both perceptual and intellectual domains, and because they are frequently implicated in personality and social functioning, they promise to provide a more complete and effective characterization of the student than could be obtained from the usual aptitude and achievement measures. As Messick (1979) stated in a recent article, cognitive styles have "broad import for education for they influence how students learn, how teachers teach, how students and teacher interact, and how educational and vocational choices are made" (p. 287).

Learning and thinking in the classroom show wide individual variation. As we have tried to indicate in this chapter, such variation appears to be at least partially stylistic. Bloom (1976) concluded in his book, Human Characteristics and School Learning, that most students become very similar in learning when provided with favorable learning conditions. He argued that much of the observed individual differences in learning are manmade and accidental, and that their stability is a result of the constancies in both home and school characteristics. In Bloom's view, what is needed to provide appropriate learning experiences is a detailed description of the student's learning history as it pertains to his or her present needs and capabilities. "In general we believe that the greater the variety of instructional materials and methods used within a classroom, the greater is the likelihood that each student will secure the cues he needs for his learning. What remains is to determine sounder procedures for relating individual differences in learners to differences in the way in which learners should encounter the cues" (p. 117). It is our belief that assessment of students' cognitive styles, the "how" in addition to the "what," would contribute significantly to this description of "entry characteristics" for improving the quality of instruction by indicating the extent to which cues, practice, and reinforcement are appropriate to the needs of the learner.

Hunt (1975) has suggested that we formulate "accessibility" characteristics of individuals in terms of their cognitive, motivational, value, and sensory orientations. Accessibility characteristics could identify what stimulus characteristics are most attended to or what processes are typically used. They focus on the active qualities of the learner and signal the preferred avenues for effective communication between teacher and learner. Our hope is that cognitive styles can be refined and explored so that they can attain the status of accessibility characteristics and will directly influence adaptive education. Under our present educational policies and practices, many of our nation's children fail to thrive, and few experience the excitement and joy of realizing their potential. This doesn't have to be the case. In our view, greater appreciation for and understanding of these stylistic aspects of human diversity can make a significant contribution to achieving an adaptive student-centered educational environment.

The identification of differences in learning strategies related to differences in cognitive style opens the possibility of developing teaching approaches compatible with these strategies, thus individualizing the teaching-learning process and effecting a student-centered rather than a system-centered educational program. For example, conceptual level, conceptual differentiation, and breadth of categorization may be very useful for individualization of instructional decisions concerning the clarity, strength, and comparative qualities of the distinctions that are presented to the learner. In learning characterized by fine distinctions between ideas, labels, and the like, it would be useful to know the natural "discrimination-gauge" that the learner uses so that appropriate adjustments can be made. The differential salience of social cues and the use of different concept attainment strategies by relatively field-dependent and field-independent persons also have obvious instructional implications.

In Grannis' chapter he refers to one's threshold of susceptibility to environmental press as a particularly important mediator of the effects of contexts or environments. Individuals may reflect differential sensitivity to types of cues and messages emanating from the environment, as well as from the other participants. Thus environments have differentially powerful effects to the degree that "induced" over "own" forces predominate. We need a way to identify children who are not meeting our expectations simply because they are not receiving our too weak cues. Procedures and goals may need to be spelled out more clearly and with more detail for some children, and conflicting or overriding messages from the environment (e.g., from other children) may have to be eliminated or masked so that the task-related message is perceivable. Other children may simply require periodic repetition of task orientation messages through the same or through other media/form than that from which the other children receive them.

Individualizing education also means that we must question the assumption that there is only one way of accomplishing a task or acquiring a skill. We must be cautious, however, in assuming what skills or knowledge is required of a learner to accomplish a task. Different patterns of styles (and abilities) are associated with success for different presentation formats and outcome measures. Logical, discipline-determined sequences do not have any a priori determining influence on how children must learn even a "self-contained" body of skills and/or knowledge precisely because they are humanly constructed sequences meant to serve various purposes other than the pedagogical. What is required is imaginative, controlled observation of how children actually do learn most effectively and comfortably within particular domains of skills and knowledge, always being alert to the possibility that different cognitive routes (and thereby different instructional methods) may be more efficient and comfortable for children having different entry characteristics (i.e., aptitudes and styles). We need to structure environments so that we are better able to observe such individual differences. Also, outcomes/criteria need to be operationally defined in terms of alternative specific behaviors under alternative specific conditions so that learning is not confused with a single specific form of criterion behavior. The commitment to individualize education requires that the learning of concent be aided, as well as tested, with formats optimal for a particular student.

Since stylistic tendencies may lead to, as well as originate from, different reinforcement histories, it would appear important to compensate for this by providing a broad range of experiences. For example, the interpersonal competencies of the relatively field-dependent person are viewed as developing out of the tendency to rely on external referents. Such skills are important if we value a cooperative social system. Consequently, we need to examine the extent to which relatively field-independent students are provided opportunities that call attention to and reinforce the use of social and personal cues.

In our review of the research literature, the important role of socialization in the development of sex differences, particularly for the field dependence-independence dimension, was noted. This conclusion and the reported finding that cognitive style-matched teachers and students rate each other more highly on both academic and personal qualities, tempt one to consider the possible implications for both illuminating and improving the traditionally difficult access by females to male-dominated educational and career areas. It can be surmised that culture-reflective socialization into style-differentiated sex roles, combined with the operational characteristics of cognitive styles, could result in the maintenance of a society with sex-differentiated political and economic roles. If males are differentially socialized into independent, analytic, articulated response modes, they can be expected to outperform females in those culturally preferred activities advantaged by that pattern, and thus to achieve/acquire the status and power associated with superior performance in valued activities. Thereafter, this system might be perpetuated by the unconscious preference of individuals for others of the same cognitive style (who are also likely to share their interests), leading them quite naturally to promote those of similar style in their field. The power and extensiveness of the influence of cognitive styles as exemplified above, be they considered inherent or acquired characteristics, requires that they be analyzed all the more carefully to determine the extent and relevance of their functioning and consequences outside the purely cognitive domain, as well as the dynamics of their development.

Messick (1976) has also pointed out that cognitive styles have significant implications for assessment. First, the concept of styles suggests an alternative focus on individual patterns of functioning across tasks and domains rather than a sole emphasis on accuracy. Messick's (1971) earlier caution that the teaching of maximal learning of subject matter is not enough, that we need to attend to the student's manner of thinking, seems particularly appropriate during this "back to basics" period. It is our belief that an emphasis on basic skills needs to include a recognition of the importance of process--modes of thinking--as well as content. As Kogan (1971) suggested, "It may be more useful to encourage development of long-term cognitive strategies that are of adaptive value for learning and problem solving both inside and outside the classroom" (p. 292). The acquisition of alternative problem-solving strategies, and their conscious selection and use, should be basic in any educational plan. Second, consideration of cognitive styles calls attention to the fact that performance on assessment measures reflects the interaction of an individual's style with the task format and test conditions, just as instruments used to measure styles are not pure measures of styles but of performance affected by styles as well as abilities. For example, the differential influence of a relatively reflective or impulsive cognitive style on multiple-choice tests has been discussed. We must become more sensitive to the danger of equating style differences with differences in competence. Performance differences may reflect production deficiencies stemming from the individual's style of response rather than his or her ability. In some cases, simply encouraging the person to reflect, or calling attention to ignored cues, can eliminate such differences. In a recent article Messick (1979) also emphasized the usefulness of cognitive styles in evaluating educational programs as outcomes in themselves and/or as moderators of differential educational effects.

Assuming appropriate measurement, a number of issues remain concerning how these selected aspects of human diversity should be used to optimize people's functioning. We should not, for example, confuse individual difference dimensions with group classification/segregation. As the limited research data indicate, individuals reveal a particular style to varying degrees depending on the task, setting, purpose of the assessment, prior experiences, and other cognitive, affective, and social characteristics. Individual consistency in style expression has been recognized as an important variable in itself (cf. Kogan, 1971; Witkin & Goodenough, Note 1). Tracking individuals on the basis of a particular task performance ignores these facts. Obviously, to obtain a more reliable index of a particular stylistic dimension, multiple assessment strategies should be used whenever possible. For example, Witkin and Goodenough (Note 1) recommended that a battery of measures comprising the RFT, EFT, and tests of interpersonal competence be used in assessing field dependence-independence. Nevertheless, the danger of separating people into distinct types remains. Moreover, in so categorizing individuals there is the additional risk that despite the purported claim to neutral, value-free labels, in many instances this is not the case. Instead, many of these labels have surplus meanings that may interfere with the effecting of educational equity. Examples of such negative value-laden terms in our society are impulsive, dependent, undifferentiated, nonanalytic, and constricted. As is common with many areas of measurement, the problem of assuring appropriate interpretation of test performance remains.

Similarly, we echo the caution expressed by Witkin and his colleagues (1977) regarding the strategy of matching students and teachers according to their cognitive styles. Although such matching may facilitate students' initial acquisition of skills and thereby provide an important motivating influence, the long-range consequences are unknown. Moreover, it is our belief that in a complex changing society with diverse environmental demands, students need the opportunity to become sensitive to, and proficient in, multiple alternative strategies. This does not eliminate, however, the need for us to become sensitive to the individual's present preferred strategies or styles in order to enhance his or her present functioning and to foster transitions to alternative strategies and styles. To do this, of course, requires preservice and inservice training of school personnel to be sensitive observers and to become adept in conceptualizing and operationalizing alternative strategies.

It also must be recognized that when applying any of the individual difference constructs discussed in this chapter one is dealing with a whole person, not some particular component. To effect appropriate adaptations we must determine how a particular aspect functions in the total organization of the person. Although cognitive styles have been conceptually differentiated from one another, they can and do operate simultaneously. Similarly, styles interact with other personal characteristics. We should not consider students on the basis of a single characteristic; instead, we must examine several characteristics at once since they may influence or mediate the effect of other characteristics.

Throughout the chapter we also have emphasized the necessity for taking context into account both in the assessment of cognitive styles and in their application. Not only do individuals exhibit stylistic dimensions to varying degrees across tasks and settings, but in some situations such responses may not be the prominent approach. In any consideration of the educational implications of cognitive styles, it must also be recognized that some cognitive styles may be too specific to be of use in understanding how a learner meets the complexity of a learning experience in the educational setting. The classroom situation is a complex and ambiguous one, and thus difficult to interpret from the individual's point of view.

In addition, despite one's sensitivity and responsiveness to the cautions presented above, it is essential that any assessment of an individual's cognitive styles takes into account the dynamic transactions that are continually occurring between people and their environments. Consequently, assessment should be an ongoing process to foster adaptive management of learning and teaching transactions.

Before concluding, we want to make it clear that the critical attitude prevalent in this chapter stems from our concerns about the appropriate application of cognitive-style information. We heartily agree with researchers in the field that this area is an important one in the study of cognition and learning. We do need to expand our static and generally pedagogically irrelevant status categories, such as socioeconomic status, age, sex, and ethnicity, with process variables that focus on the how rather than the what. As the research evidence indicates, cognitive styles vary as much within ethnic, racial, socioeconomic status, and language groups as they do between groups. Thus styles contribute to diminishing stereotyped characterizations of such performance differences. Moreover, the form of educational applications becomes increasingly important as the concerns and technology of educational institutions allow realization of a more precise and complex view of individual differences in learners as well as in teachers. Cognitive styles take on importance in this new educational context to the extent that they reliably describe meaningful behavioral differences in people's approaches to learning situations. Educators must accommodate to these differences in themselves and in learners if they are to fulfill their public mandate to aid all learners in their quest for increased competence. Thus the above criticisms are presented as suggestions towards clarifying our concepts, the relationships among them, and the educational applications made possible by carefully examined cognitive-style information. Although some of these criticisms may appear harsh, they are not meant to discourage but rather to better explicate the use of existing concepts and instruments as well as to stimulate research from a broader perspective on educational needs.

Therefore, despite the many unanswered questions, we believe that the construct of cognitive style is very useful and illuminating. It is continually being refined and explored both internally and with reference to other constructs, although much more has yet to be done. The crucial importance of cognitive style is that it offers a way to examine the processes of perceiving and interacting with the world in a much more articulated manner than was previously possible with uni-factor models of intelligence, or even the more sophisticated models of separate, developed abilities. It offers a more flexible, and probably more appropriate/practical scheme for investigating learning successes, differences, and problems by focusing on task requirements and the possibility of their interaction with various approaches and styles of information-processing. Although much has been made in the literature defining the fundamental and broad operation of these styles across domains of functioning, and it is exciting to encounter such potential for holistic analysis of individual functioning, caution must be exercised to avoid a too simplistic search for easily categorizable personality types that does violence to the complex interactions both between areas of human functioning and the operation of the effects of environments and predispositions. But as

Messick (1976) has noted, the stability and pervasiveness of [some] cognitive styles across diverse areas of functioning suggest deeper roots in personality. There is need for renewed focus on the role(s) that cognitive styles play in bridging cognition and personality.

One of the most promising aspects of the conception of cognitive styles is its value-free emphasis. Most cognitive styles are conceived as bipolar and neutral with regard to value. As has become increasingly recognized for the field dependence-independence dimension, each pole has adaptive value in particular tasks and situations. Thus the value of one cognitive style over another is related to the demands of the ecology and the social environment. Consequently, attention to these stylistic dimensions should broaden our perspective on the richness of diversity among individuals and make us sensitive to the narrow definitions of competence typically used in our society. Behaviors described, for example, as reflecting field independence or an abstract conceptualizing style are not necessarily better. On the other hand, very little is value-free in human society, and cognitive styles do not operate in a vacuum. It is not completely accidental that intelligence test items favor certain cognitive styles over others: societies do reward activities differentially according to the values and structure of their culture. For important decision-making, complexity of concept-representation has a decided advantage in accommodating the variety of considerations that inevitably come into play. Similarly, in a competitive economy/society narrow categorization is dramatically more prevalent in discerning the "best," or the "most appropriate," position, school, applicant, procedure, or product precisely because the errors of inclusion are more costly than those of exclusion. However, we need to make our values explicit so they can be examined critically for their long-range consequences.

As several theorists referenced in this chapter have argued, we must become aware of how our educational system has fostered a narrow viewpoint. For example, Ramírez and Castañeda (1974) have pointed out that most schools foster and are supportive of educational styles (i.e., preferred modes of communicating, relating, motivating, and teaching) that are characteristic of the Anglo-American middle-class culture. They define as culturally undemocratic those policies that exclude, ignore, or prohibit expression of modes different from this model. As they have cogently argued in advocating bicultural education, the total society benefits when our educational institutions not only recognize the value of different approaches but provide students the opportunity to develop multiple skills and strategies. In the introduction to their book, Cultural Democracy, Bicognitive Development, and Education, Ramírez and Castañeda state, "Culturally democratic societies would enable children to develop both [poles of] cognitive styles, to practice cognitive switching and thereby be able to meet the diverse demands of life more effectively. . . . Through cultural democracy, with concepts of bicultural identity and bicognitive development, American education [would] use strengths to be found in the individual differences of its people" (p. xii).

In agreement with this view, it is our belief that we should not only recognize and value diversity among individuals--including their multiple stylistic approaches to problem solving--and adapt learning environments accordingly, but we should also facilitate the development of diversity within individuals by acquisition and facility in the individual's appropriate use of multiple strategies. In closing, we urge support for the position presented by Witkin et al. (1977) that "for the educator, the development of greater diversity in behaviors within individuals seems as important an objective as the recognition and utilization of diversity among individuals" (p. 53). Freedom implies choice. In order for true educational equity to be effected, our socioeducational policies should provide individuals with the experiences that make such choice possible.

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CHAPTER 13

The Objective Environment, Environmental Press, and the Diversity of Learners and Teachers

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Of the Human Diversity Project chapters, this is the only one that starts from the environment side of person-environment interactions in education. Whereas the other chapters take as their point of departure psychological, social, or physical definitions of individuals, or classes or groups of individuals, to ask how these might differentially interact with the properties of educational treatments or settings, this chapter is charged to begin with the treatment or setting variables and work toward their articulation with different individuals.

The charge is sobering, in that it would be quite impossible in one chapter to reexamine all of the studies reviewed in the others. On the other hand, the task can be defined in several more specific ways. First, the nature of environmental variables, their variety and interconnection, and how they are articulated with the cognitions, feelings, and actions of persons might be more clearly delineated through this chapter. Second, it is conceivable that, in proceeding from the environment term, attention would be drawn to person variables that are less prominent in the framework of the other chapters, as well as linking up with variables that are more central in these frameworks. Third, an environmental point of departure might lead to a framing of alternative paradigms for construing the interaction of persons with their environments, different general models of how the variables interact. These three possibilities, each from an educational standpoint, represent the specific objectives of this chapter.

The chapter will be written fairly discursively for much of its length, in order to build up a mass of material illustrating or leading toward generalizations and to locate this material in the history of the problem it deals with. Toward the end the chapter will shift to a more

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synoptic style in order to organize the generalizations in a comprehensive model of interactions in the environment of behavior and to indicate where other material, only briefly cited, might be related to the model in further analysis and research. Implications for instruction will be summarized in relation to the general model in the conclusion.

It is necessary here at the beginning to distinguish between two senses of the phrase, "person-environment interaction." The statistical sense, variation on some outcome measure due to joint effects of person and environment (Cronbach & Snow, 1977), is the usage that predominates in the Diversity Project Report. A behavioral sense, what the person and environment do to each other and with each other, is more common in the literature on environments and behavior. The situational specificity of behavioral interactions sets limits to how much they will be reflected in statistical generalizations. This, indeed, was Cronbach and Snow's conclusion as well. This chapter plays back and forth between these conceptions of person-environment interaction.

A second clarification to make at the outset is that, depending on the issue at hand, various phenomena of human functioning (behavior, habits, attitudes, values, beliefs, perceptions, preferences, judgments) are emphasized in different passages below. As will become apparent, especially in the discussion of a congruence model, the concept of judgment is crucial to the author's interpretation of person-environment relationships. However, all aspects of human functioning are potentially important in education, and each figures centrally in one or another theoretical interpretation of person-environment interactions.

The Objective Environment and Environmental Press

The concept of an "objective environment" stands for the environment that might be described by a consensus of external observers. It is not presumed that subjective factors, the personal judgments and cultural orientations of observers, would be entirely absent from such a consensus, but that operational definitions of elements and relationships in the environment would be shared to the extent necessary to attain a criterion of reliability among the observers. Thus an activity can be defined as "overmanned" when there are more persons than there are specifically delineated tasks or functions to be performed by persons in the activity (Wicker, Kirmeyer, Hanson, & Alexander, 1976). The fact that "overmanning" is a concept that has arisen in the culture of behavioral scientists, and that scientists might count the tasks of a specific activity in different ways suggest the limits of objectivity. Still, the ideal of an objective environment will be seen to have theoretical meaning in its apposition to the concept of environmental press.

Environmental "press" was first defined by Murray: "The press of an object is what it can do to the subject or for the subject--the power that it has to affect the well-being of the subject in one way or another" (Murray, 1938, p. 121). Murray drew up various lists of environmental press (the term is both singular and plural). A classification of the press of childhood included, among 21 major headings, the categories of "retention, holding objects," "nurturance, indulgence," and "affiliation, friendships." It is clear from such a list how strongly Murray defined press in relation to the subject. By contrast, the categories "color," "space partitioning," and "population density" represent relatively neutral definitions of environmental features, which might or might not affect subjects in ways that are not directly suggested by the terms. One imagines that the set of all environmental features is greater than the set of those that potentially affect a subject. However, this proposition could be debated, while the distinctions it reflects would remain valid.

Murray distinguished between the press that exists objectively for a subject (alpha press) and the press that a subject perceives (beta press). In our terms, the objective environment can be defined to include, but not necessarily to be exhausted by, alpha press. Murray suggested that consensual beta press, the press perceived by a consensus of the participants in a setting, could be taken as an approximation to alpha press. This has subsequently become one of the major strategies of research on the effects of human environments. Some research, for example the work of Stern (1970) on college environments, and of Moos (1974a) on mental health care environments, has relied almost exclusively on participants' aggregate perceptions of an environment to ascertain the press of the environment. Astin (1968) criticized this approach and tried, with limited success, to establish correlations between perceived press and more operationally characterized features of college environments. An example was his finding that perceived permissiveness of a college was related to the amount of student drinking and negatively related to the amount of religious activity and to the severity of the administrative policies against student drinking, heterosexual activity, and aggression. Research on crowding, after first assuming that constituting larger or more dense aggregates of individuals created more crowded conditions, later turned to asking how large or dense a crowd had to be to feel like "a crowd."

How the Environment Presses

A collection of individuals being spatially segregated, or segregating themselves, from others on the basis of ethnicity; their physical orientation to one another directly through eye contact, or indirectly through a common focus on a speaker or other subject of attention; their interaction including sounds and gestures that occur less frequently in the communication of outside groups; the presence of concrete objects freighted with symbolic meaning for the participants; the synchronization of their energies with shared rhythms of speech and ceremony; their crowding together in a manner that heightens the intensity of participants' feelings; all of these and other features of the setting could contribute to a press for ethnic affiliation or unity.

Again one resorts first to Murray, to ask how the environment presses. Murray argued that the environment less often influences behavior directly than indirectly. By the latter, he meant that the individual anticipates, or apperceives, the effect of an environmental object or event. The concept of press was actually developed later in Murray's system than the concept of needs, and most of his categories of press can be linked with his needs categories, for example "_n_ affiliation" and "_p_ affiliation." Murray postulated that subjects' needs were connected with press in "needs-press themata," which figured in subjects' cumulative perceptions, and thus apperception, of environmental objects--hence the Thematic Apperception Test (TAT), which Murray invented. Various models of associational learning and symbolic processing of information could be invoked to explain how apperception develops: operant conditioning, imitation and role taking, concrete and formal logical operations, and so on. Environmental psychology adds to these the powerful idea that the _design_ of a setting, its deliberate patterning, _signals_ that certain behavior is expected in the setting (Barker, 1968; Proshansky & Wolfe, 1974). Chairs arranged in a circle convey the expectation of the arranger that participants will interact with one another more than do chairs arrayed in rows facing a speaker (Sommer, 1969). An open door invites visiting (Lawton & Simon, 1968). "White noise" suggests differentiated activities, "open space" suggests coordinated activities, and so on. If this appears to be a strictly architectural viewpoint, it must be stressed that the symobolic functioning of environments is probably much more far reaching than what can be understood in architectural terms alone. Grannis (1975, 1978) has argued that the distribution of controls over various behavioral elements of a learning setting--control of options, control of pacing, control of feedback, control of interaction, etc.--constitutes a message system about the control of not only the processes but the outcomes of activity in the setting. A setting in which individual learners exercise control over these elements, as opposed to the teacher's controlling them, _signals_ that creativity, self expression, exploration, or just "messing around" is the intended outcome--allowing here that the general message of openness is still subject to different interpretations, say in relation to the different forms and degrees of self-discipline that learners might impose on their activity. (See below.) The question of how learners from different social backgrounds might "decode" such environmental messages differently, or might value differently the educational messages decoded in this way, is a central problem raised by

Bernstein's (1977) concepts of "visible" and "invisible" pedagogy. At this point, it is important to stress again the idea of the design of an environment or setting as something that can be manifest to participants as, say, a program for their activity in the environment.

The pragmatic functioning of the environment (Proshansky & Wolfe, 1974) probably covers what Murray implied about the more direct ways that the environment influences behavior. Corridors channel behavior, as do time schedules and organizational hierarchies, all of which function on micro-levels in classrooms to channel behavior into, for example, teacher-learner interactions in certain settings. Environmental features can also serve as barriers to behavior, as walls and chasms do most literally, but language differences and status gaps do also. The environment furnishes props for some behavior, for example the toys, found objects, and surfaces of children's play, and equally it can be devoid of props for one activity or another, as the same objects of children's play may have been left out of a particular setting, etc. That the environment satisfies, or fails to satisfy, one or another need, is the direct influence that Murray most clearly indicated. The environment proffers, denies, feeds, and starves. The anticipation of these effects involves, again, thematic apperception.

Lewin's (1946) theory, which in fact was intertwined with Murray's from 1938 on, formulated these processes in related but different terms. Lewin summarized his framework in the equation, B=f(P,E), behavior is a function of the person's interaction with the environment. He spoke not of "press," but of "valences" and "vectors" or "forces." Regions of the psychological or perceived environment can be positively or negatively valued by a person. These valences--for example, a positively valued toy and negatively valued peer--are created by the person's perception of the environment in relation to inner needs. The valences contribute to vectors, which are influenced not only by the strength of the value but by the psychological distance between the subject person and a valenced region. Finally, these vectors combine to yield a resulting force, which precipitates locomotion by the subject person to effect the maximal tension reduction within the person's inner system.

Lewin himself, though not his followers, seems to have dealt only with Murray's beta press, the objects or events whose potential influence the subject perceives. Lewin did recognize an outer universe of physical and social facts that impinged upon the psychological environment, but the 'E' of Lewin's equation referred only to the latter. Indeed, the person and the environment define one another to some extent in Lewin's formulation, even though a boundary is posited between P and E. The environment of a child who can walk is different from the environment of the child who cannot walk, and the child in an environment laden with objects to grasp is different from the child in an environment devoid of such objects.

A second critical contrast of Lewin's scheme to Murray's is the almost idiosyncratic nature of the-person-in situ. Whereas Murray proffered some possibility of classifying persons according to dominant needs, Lewin--at the same time that he made need central to both the inner system and perceived environment--did not treat needs systematically. This seems to be the chief reason for the lack of follow-up to Lewin in personality research as such, by comparison with the enormous influence of Murray on personality research. On the other hand, Lewin's emphasis on the psychological complexity of the environment has been very influential, in studies of milieu or climate effects on attitudes, interpersonal relations, and productivity, and more generally in the attention given to environmental complexity by ecological psychology, which very phrase was coined by Lewin (1935).

Barker and his associates (Barker, 1968; Barker & Wright, 1955; Barker & Gump, 1964) have developed the discipline of ecological psychology in terms that are highly relevant to the framework of this chapter. Their two main strategies of data collection, behavior stream and behavior setting observation, are oriented to the discovery of units of behavior and milieu that recur in "natural" environments, i.e., in environments not deliberately established by experimenters to control or manipulate variables entering into behavior. Of course, this ecological perspective can be applied in some degree to experimental situations as well to ask what unsuspected factors and unintended effects might be involved in an experiment or scientific intervention (Bronfenbrenner, 1976; Willems, 1977). Both kinds of application will be drawn upon in this chapter.

Behavior stream observation produces a continuous, ordinary-language description of a subject's activity through time. It is oriented to an individual's immediately goal-directed or intentional behavior and to the immediate environmental events and circumstances that might be affecting the course of this behavior. In Midwest and Its Children (Barker & Wright, 1955), the authors demonstrate the descriptive fecundity of these observations through their analysis of numerous features of the behavior streams of children. More than this, they illuminate critical junctures in the behavior streams--the initiations, interruptions, and terminations of behavior episodes--where environmental influences on behavior are particularly salient. Consider the initiation of episodes. Barker and Wright categorized them as "spontaneous" (beginning in the apparent absence of external instigation), "instigated" (the child is seen to respond to some observable event or change in his situation, exclusive of pressure), and "pressured" (when an episode appears to begin as the result of an external influence that is in any way inconsistent with the child's own momentary needs and goals). For twelve children who were each observed for an entire day, the median and range of percentages of each type of initiation were found to be as follows: spontaneous (49%, 42-62%), instigated (41%, 34-54%), pressured (3%, 0-8%), and can not judge (statistics not summarized). Barker and Wright (1955, p. 296) did not report a comparison of in-school and out-of-school episode initiations from this standpoint, but one can imagine the utility of such an analysis. The authors did report that pressure from teachers on subject children was more frequent in the behavior streams overall (not necessarily more intensive) than pressure from mothers, whereas mothers' pressure was more frequent than that of siblings or child friends. A set of related findings added up to the adults in the community exerting pressure on children more frequently than the children's pressuring adults. What needs to be stressed at this point is not the findings as such--of which there is a plethora in Midwest and Its Children and related research--but, again, the strategy of examining the structure of naturally occurring behavior for evidence of how the environment influences behavior.

Behavior setting observations or surveys are complementary to the observation of behavior streams in ecological psychology. Here the observer attends to the features of a specific environment that occur simultaneously in time, to the recurrence of this constellation of features at different points in time, and to the regularity of behavior associated with the constellation. "A behavior setting has been defined as a standing pattern of behavior and a part of the milieu which are synomorphic and in which the milieu is circumjacent to the behavior." (Barker & Wright, 1955, p. 45). "Synomorphy" has to do with the fittingness of the behavior and milieu in relationship to each other. The standard example of chairs in a circle for mutual interaction applies, but this would be only one of a number of synomorphs that could be discriminated in a setting like a classroom discussion or a political meeting, other synomorphs involving other behavior objects, the time frame of the setting, its population, etc. The significance of the milieu's being "circumjacent" to the behavior is not simply that it bounds the behavior physically, but that different individuals can enter or leave the setting while the standing pattern of behavior persists. What this leads to in the present chapter is the ecological psychologists' emphasis on the coerciveness of settings. It is a paradox of ecological psychology that the behavior stream observation is oriented first of all to the goals of individual subjects, whereas the setting observation is directed toward patterns of behavior in which the individuals appear to be virtually replaceable.

A partial resolution of this paradox, which to some extent is effected by the analyses in Midwest and Its Children, entails the charting of individuals' activity through different behavior settings, or an overlay of the categories of setting analysis on the records of the behavior stream observation. Grannis (1978) employed this technique to discover how the conditions of differently structured classroom settings (more accurately, in Barker & Wright's terms, "subsettings") influenced children's task engagement, or their persistence in the main activities appearing in the stream of their behavior. "Task engagement," it must be stressed, is a structural, not a normative concept. Settings in which the learners are highly engaged (in arithmetic, art, or whatever) are not necessarily educationally valuable, but the engagement can be taken to reflect the holding power of the setting, its capacity to sustain a learner's engagement, or the appropriateness of the match between the learner and the setting (Hunt, 1963). The power of analyzing the behavior stream in relation to settings can be illustrated by a subset of findings of this analysis. Setting observations in classrooms discriminated three basic patterns of teacher-pupil interface, one in which a teacher was continuously present, a second that entailed the teacher's moving regularly in and out of the pupil's presence, and a third in which the teacher was basically absent, somewhere else in the room, though the teacher and pupil might occasionally interact upon the initiative of either party. The setting observations also revealed that the children sometimes were provided with materials that furnished direct feedback, for example, manipulative materials or workbooks with answers in the margins, but at other times the children had materials without direct feedback, for example, workbooks without answers, or simply no materials at all. Again, it was apparent from the observations that the children were sometimes allowed, or indeed encouraged, to interact with each other, and that at other times their direct interaction was discouraged. In themselves, none of these variations is surprising, nor yet another variation, that the pupils sometimes could choose their activity from an open set of options, at other times chose from a limited set of options, and at still other times had no say in the choice of their activity. The point is, rather, that these different environmental features emerged as seeming to have special significance for action in the classrooms, and that in different combinations they appeared to capture the abstract outlines of the setting of the classrooms. Thus they became crucial variables to apply to the analysis of the child behavior stream observations made in the classrooms. This analysis then revealed, among other things, that when the children were in settings from which the teachers were basically absent, and in which they neither had materials that provided direct feedback nor were supposed to interact with other children, the percentage of time that they were engaged in the task of the setting was lower than in settings with any other combination of conditions. There are even data to suggest that the prohibition of interaction between pupils during independent activity was "read" by the children that their interaction--which they engaged in despite the prohibition--should not be related to the task of the activity. As the children in self-paced settings gained access to feedback from materials and/or from other pupils, their main task engagement substantially increased. Options entered into this in a striking way. When the children elected their activity from an open set of possibilities, they invariably chose activities with high feedback conditions--not just in "enrichment" activities, but in the "basic" activities of language arts and arithmetic. When the teachers designated the tasks for children's self-paced activity, they varied considerably in their provision of supporting feedback conditions, with the result that the main task engagement of the children varied as well. It might be said that the children, who, after all, were the ones who had to sustain the activity in self-paced settings, were at least intuitively more aware of the conditions appropriate for this than were the teachers. The observations thus discovered an unintended effect of certain settings putatively designed for children's "independent" activity, as well as an underestimated capacity of the children to govern the conditions of independent activity appropriately, when they had control over these conditions.

What one sees so far in this example is both the coerciveness of settings and the differential ability, or disposition, of different sets of individuals, in this case children compared with teachers, to design or select settings appropriate for a certain kind of activity. However, the settings associated with high task engagement occurred more in some classrooms than in others, reflecting differences in teachers' design of settings for independent activity. Some of the programs sponsoring the classrooms observed seemed to have fostered more appropriate design behaviors on the part of teachers than did others. Moreover, it is apparent from a reading of the behavior stream transcripts that individual children varied in their need for direct feedback during independent activity. The formal analysis of the records did not attempt to establish these differences. They are suggested here as a lead to later sections of this chapter, in which children will be seen to be differently susceptible to the coerciveness, or let us say now--retreating to the more flexible concept--the press of different environmental conditions.

Wicker, in a major article, "Processes Which Mediate Behavior-Environment Congruence" (1974), included under three headings--operant learning, observational and instructional learning, and social exchange theory--most of the processes that have been referred to in the present discussion up to this point. The following summary statement on social exchange theory particularly illuminates the task engagement example:

> Another process which mediates behavior-environment congruence is the selection of settings to be entered by an individual on the basis of his ability and/or desire to perform the standing patterns of behavior [Barker, 1968, p. 31]. That is, a person is likely to enter settings which permit him to engage in behaviors which he enjoys or which further his goals, and to avoid those which do not. In a similar fashion, a setting may, on the basis of its goals and functions, select from among its occupants certain persons who are to leave and others who are to stay. (Wicker, 1974, p. 610)

The process of children's entering or leaving a setting is most definite when they are free to elect their activity, and to terminate one activity, that is either completed or not satisfying, in favor of another. In a sense, however, children's going "off-task" can also be construed as leaving, or rejecting, a setting. It is thus an index of a child's avoidance of a setting that does not further his/her goals, and/or the setting's ejection of an individual who does not meet its demands. "Off task behavior" is a special case of Barker and Wright's "interruption." It turns out to be particularly sensitive to variations in environmental conditions, whereas "time on task" is proving to be a predictor of learning in the area of the task (Bloom, 1976). Task engagement or disengagement is in this way not only a mechanism of person-environment interaction, but, again, a clue to the presence of variables in the person and the environment that are appropriately, or not appropriately, matched for the goals of the behavior in question.

Under a fourth heading--behavior setting theory: a feedback model--Wicker discussed Barker's (1968) "information processing feedback model which attempts to represent the mechanisms which occur to keep setting events within bounds acceptable to setting occupants" (Wicker, 1974, p. 607). The effort of setting participants to maintain the standing patterns of behavior and the milieu features of settings is stressed in this model. Operating mechanisms are utilized when a setting is satisfying its participants' needs, but two forms of maintenance--deviation countering mechanisms and veto mechanisms--are said to come into play as a setting fails to satisfy needs. In relation to the problem of this chapter, this theory argues that setting participants will press individuals to conform to the roles that are available or prescribed for them in the setting.

Sociological research on classrooms has recurrently stressed the pressure on teachers, especially new teachers, from other teachers in a school and from students as well, to enact the role of disciplinarian above all other roles, more specifically a highly visible and audible disciplinary role, as the appearances of "disorder" are easily heard and seen in the school environment, and order is an overriding concern of school staff, parents, and, in diverse ways, the students themselves (Waller, 1932; Smith & Geoffrey, 1968; McPherson, 1972; Lortie, 1975). This same research has delineated reciprocal roles for the students in the disciplinary situation--clown, bully, goat, good boy, bad boy, teacher's helper, the nonworker, and so on. Teachers frequently remark that a classroom would be fine if only it did not contain just "one or two" children who were particularly impossible to deal with. From the standpoint of role theory and Barker's setting maintenance model alike, it is possible that if these one or two children were removed from a class, one or two others would replace them in their roles. Another example of the setting maintenance model might be Copeland's (1978) finding that student teachers were more likely to utilize a probing skill, subsequent to micro-teaching training, in classrooms in which the pupils were accustomed to a teacher's probing, than in classrooms where the regular teacher did not ask probing questions. Copeland pointed out that a pupil's responding to an initial probe commits the pupil to a possible sequence of probes, and he argued that this dependence of the teacher's behavior on the students' commitment makes probing a peculiarly suitable focus for investigating the effect of the classroom ecological system on student-teacher behavior.

A final perspective on how the environment presses is afforded in Bronfenbrenner's (1976) emphasis on the systemic complexity of the environment. For this purpose Bronfenbrenner employed the following distinctions adapted from Brim (1975):

> A micro-system is an immediate setting containing the learner (e.g., home, day care center, classroom, etc.). . . .
>
> The meso-system comprises the interrelations among the major settings containing the learner at a particular point in his or her life. . . .
>
> The exo-system is an extension of the meso-system embracing the concrete structures, both formal and informal, that impinge upon or encompass the immediate settings containing the learner and, thereby, influence and even determine or delimit what goes on there. . . .
>
> Macro-systems are the overarching institutions of the culture or subculture, such as the economic, social, educational, legal, and political systems, of which local micro-, meso-, and exo-systems are the concrete manifestations. . . . (Bronfenbrenner, 1976, p. 163)

Much of what Bronfenbrenner had to say about the value of conducting research in natural settings, the importance of obtaining participants' perceptions of a setting, analyzing the physical and social structures of the setting in relationship to participants' behavior, and recognizing reciprocal processes among all the participants in a setting, accords with what has been written to this point. However, Bronfenbrenner especially calls attention to the nesting of micro-systems in the successively more encompassing systems of the individual's life space. The compatibility of the school, the family, the peer culture, with a particular classroom, and the press of the government or the media, say for accountability, can all figure in the resultant, or indeed conflicting, press of the immediate environment upon the learner. Sarason (1971) has drawn from related observations the conclusion that attempts to change educational practices must involve simultaneous inputs to various parts of the environmental system. Willems (1977) remarked that, indeed, the experimenter or behavior modifier can never do just one thing, so that it is essential that the side effects of interventions be monitored. Bronfenbrenner argued that the full complexity of educational interventions can only be understood by following ecological principles for the identification or design and study of natural experiments.

Some behavioral and psychological effects of environmental factors manifest themselves only after long periods of time. One pattern of delayed effects is an incremental one, for example the way in which various insults to the lungs (tobacco smoke, asbestos, other air pollutants) appear to cumulate to produce cancer. Another pattern, closer to the Bronfenbrenner model, is one in which a subject observes another individual in a certain situated role at one point in time, and years later enacts the observed behavior--for example, the punishment of a child for aggression against an adult--as the subject himself or herself now occupies the adult role in an analogous situation (Cf. Maccoby, 1972).

From an ecologist's standpoint, the complexity of the environment is not simply confusion. It is through its impinging on individuals along multiple symbolic and pragmatic planes and edges that the environment "influences" (Finn, 1972). Ecologists' realization of the portent of this has been so strong that it has tended to overshadow the question of differential individual responses to environmental press. However, there comes a point in the cataloging of complexity when one has to resort to individuals to ask how complexity is managed. This was seen above in the parodox of behavior stream and behavior setting analysis, and it will be more apparent when the variety of environmental features is considered.

The Variety of Environmental Features

This section of the chapter might logically have come earlier, but it can be presented more efficiently at this point.

The most straightforward result one might hope to gain from considering the variety of environmental features is a taxonomy or master checklist to use in studies of person-environment interactions. Sells (1976), acknowledging the potentially unlimited nature of environmental stimuli, drew up a preliminary outline. The outline contains approximately 240 entries arranged under five principal headings. "Natural aspects of the environment" includes specifics of weather, terrain, and natural resources. "Man-made aspects of the environment" subsumes social organization, social institutions ("family," "religion," "language," etc.), and transitory social norms. Under "Description of task-problem, situation, and setting," Sells listed factors defined by the focal task situation (knowledge and skills required, hazards, procedures, and so on), factors defined by the individual's relation to the situation (for example, degree of freedom vs. restriction in group activities), factors defined by other persons in the situation (such as age, sex, abilities, and acquaintenceships), and factors defined by situational setting (including physical characteristics of site location, etc.). "External reference characteristics of the individual" subsumes biologically defined factors, socially defined factors, background factors, and group memberships. Finally, "Individuals performing relative to others" includes features of the group situation (formal group structure, definiteness of goals, group's control of its members, and so on), factors defined by informal operating patterns (informal group goals, membership requirements, control of member's expression and conduct, etc.), and yet other factors.

This sketch is not meant to summarize Sells' outline, which is already highly condensed. Rather, by indicating its major headings and a few examples of its subheadings, the sketch simply suggests the basis for several observations. One is that it does seem possible to find a niche in the outline for most environmental factors that have been attended to in research, but that one needs to know the significant definitions of the factors in advance. The list is more a heuristic for the investigator who already knows how to amplify and operationalize its terms than a guide to someone who wants to become informed about the environment. Secondly, in some sections, the terms used as subheadings are relatively finely differentiated, and they approximate terms that have been given operational meaning in research, for example, "degree of freedom vs. cooperation required," "degree of friendliness vs. hostility required," etc. In other sections, the terms appear very crude in comparison to those available in research, for example, "space required," "site location requirements," and "facilities required," which is as close as the outline comes to personal space, population density, spatial definition, object density, noise, and other sociophysical factors that might be critical in a situation. Third, Sells' outline is not simply eclectic. It has a conceptual framework that is especially influenced by Sherif and Sherif's (1956) social psychology. Such a framework, a theoretical orientation of some kind, seems to enhance the outline's accessibility, at least to those who grasp the theory, and to allow new terms to be added in more meaningful proximity to other terms than just at the bottom of the list. By the same token, however, various environmental features will be more meaningful in an outline with a different conceptual framework.

Moos (1974b) reviewed various systems for the assessment and classification of human environments. His review is a useful introduction to alternative systems, but at the same time reveals the difficulty of categorizing the systems, particularly as single studies collect data in more than one category. Compared with Sells' outline, Moos' review is metataxonomic, alluding more to issues with which taxonomies would deal than offering an actual classification. The studies Moos included do not bear condensing beyond the terms in which he presented them, and Moos himself at various points could only acknowledge other reviews of selected areas of research. Again, therefore, the present discussion is only illustrative. Within the framework of this discussion, however, we will update and add some details from our own reading of two systems, the work of Astin and of Moos himself, in order to make several observations not included in the Moos review.

Moos discussed geographical and meterological variables, under the general heading of "Ecological dimensions." Variables that have been found to link with behavior include temperature, lighting, color, form, texture, sociofugal and sociopetal spatial arrangements, and so on. Moos took note of inventories that have been constructed for limited purposes, but concluded that a more integrated typology of sociophysical variables, although much needed, has not yet been attempted. The category of "Behavior settings" refers to the work of Barker and his associates. Moos emphasized the extraindividual coerciveness attributed to settings, attended especially to the findings of a study, Big School, Small School (Barker & Gump, 1964), which this chapter will focus on later, and observed that a systematic typology of behavior settings has yet to be developed. "Dimensions of organizational structure" comprehends studies that have attended to relatively objective dimensions of organizations such as size, staffing ratios, average salary levels, and organizational control structures. Moos used Astin's work to illustrate this approach to college and university environments, for example, a study (Astin, 1962) which found that 335 institutions differed along six principal dimensions: affluence, size, private versus public, ratio of males to females, realistic (technical) emphasis, and homogeneity of students' fields of concentration. Outside of industrial and educational institutions, Moos pointed to size, turnover rate, and population density (crowding) as the three most thoroughly investigated dimensions. He concluded,

> Thus a fairly large number of important structural dimensions have been identified and related to different indices of behavior; again, however, there are no overall typologies, except possibly those developed to apply factor-analytic techniques on data from certain types of institutions. (Moos, 1974b, p. 12)

Moos turned next to "Personal and behavioral characteristics of the milieu inhabitants." Pointing out that Sells included these in his outline of dimensions of stimulus situations, Moos concentrated on work by Holland and, again, Astin, to illustrate this approach. Astin and Holland (1961) used students' choice of major fields as indices of six personal orientations that could be differently represented in different student bodies: realistic (agriculture, physical education, engineering); intellectual (architecture, mathematics, philosophy);

social (education, nursing, physical therapy); conventional (accounting, library science, economics); enterprising (political science, foreign service, industrial relations); and artistic (music, English, fine arts). (Not all the fields are included in these examples.) Astin (1968) created an Inventory of College activities (ICA), which had three components: the College Environment, the College Image, and Personal Characteristics of the Students. (At this point we are combining our own interpretation with that of Moos.) The College Environment component contains items pertaining to the Peer Environment (average number of hours per week spent in various activities such as bull sessions and studying, observations of roommate's behavior, etc.), Classroom Environment (observations of instructor's behavior and of behavior of self and other students in class, modus operandi of class such as seating asignment), the Administrative Environment (disciplinary consequences of drinking, etc., frequency of actual violations of regulations), and the Physical Environment (characteristics of living quarters such as number of roommates, distance to classrooms and library, and climate). These items are putatively more objective than the items of the College Image component, the latter of which contains subjective impressions, ratings, and evaluations, that Astin expected would correlate with the more behavioral items--the alpha press-beta problem referred to earlier in this chapter. Finally, the third component, Personal Characteristics of the Students, is also represented as more objective, including self's educational and vocational plans, self-ratings (intelligence, drive to achieve), and ratings of roommates' traits (same as self-ratings).

> Astin gave the ICA to students at each of 246 institutions, obtained the mean score for each item for each institution, and then factor analyzed the results for each of the four different sections of the scale. Fifteen relatively independent patterns of student behavior were identified, for example, competitiveness versus cooperativeness, organized dating, amount of leisure time, regularity of sleeping habits, and conflict with regulations. There was remarkable diversity among the 246 institutions in how frequently many of the stimuli occurred. Thus the proportion of students who engaged in any particular activity (e.g., dating, going to church, drinking beer, voting in a student election) often varied from no students in some institutions to nearly all students in others. Astin feels this considerable diversity indicates that the peer environment has great potential for influencing the experience and behavior of the individual student. (Moos, 1974b, p. 15)

The factors referred to above pertained to the Peer Environment section of the College Environment component. Fewer factors were obtained from the Classroom Environment, Administrative Environment, and Physical Environment sections of this component. Astin reported various associations between these factors and different types of institutions (liberal arts college, technological institution, teachers college, etc.), type of control (public, private nonsectarian, Roman Catholic, Protestant), location (southern, western, etc.), size of the student body, and coeducational or male or female population. What is most critical to stress here is that Astin did *not* find many relationships between the College Environment factors and the College Image data, the problem, again, of alpha and beta press. Thus Astin's belief that the peer environment (or classroom environment, etc.) has "great potential for influencing the experience and behavior of the individual student" (Moos, 1974b, p. 15) *was not directly evidenced by Astin's 1968 findings*. This study--and one might have cited many others--illustrates the possibility of identifying environmental variables whose impact on inhabitants is indeterminate or unknown.

In a more recent study in the same institutions included above, Astin (1977) collected information on students' involvement in the college environment: place of residence (on campus or home), honors programs, undergraduate research participation, social fraternities and sororities, academic involvement, student-faculty interaction, athletic involvement, involvement in student government, and verbal aggressiveness (in class). Controlling for student characteristics at time of entrance to college, Astin found strong relationships between various of these involvement factors and various outcomes up to five years later: changes in attitudes, beliefs, self-concept, satisfaction with the college environment, patterns of behavior, competency and achievement, and career development. Entering characteristics of the students and general characteristics of different types of colleges--again, size, control, etc.--also strongly influenced outcomes. Overall, Astin's work is a particularly complete example of research that includes variables at all four of the levels of environmental systems Bronfenbrenner distinguished, micro-, meso-, exo-, and macro-systems.

Moos' review turned next to "Psychosocial characteristics and organizational climate." Many of the variables in Astin's research might appear to be included under this heading. What distinguishes the research included in this category most clearly from the other categories is the *primary* emphasis given to participants' perceptions of organizational climates. The type of data that Astin found difficult to relate to more objective behavioral items (as opposed to objective structural features) is central to the research cited in the category of psychosocial characteristics and organizational climate. One can turn this observation around, however. The climate studies have pursued participants' perceptions, despite the difficulties of relating them to more objectively defined behavior. The multiplicity of behaviors, objects, and events that could contribute to a given perception might help explain this difficulty. In any case, the climate studies exhibit a remarkable conceptual consistency, owing in part to their influences on one another, but possibly also reflecting a basic structure of life space in organizational environments, if not of meaning ("semantic space," Osgood, Suci, & Tannenbaum, 1957) more generally.

The most direct line of influence one discerns in this work (this is a major historical note on the development of the problem addressed in this chapter; see also p. 55 ff.) runs approximately as follows. Stern, Stein, and Bloom (1956) used Murray's list of human needs to create an Activities Index (AI), a self-administered instrument for college students that includes items on abasement, achievement, adaptability, affiliation, and so on. Pace and Stern (1958) took the Activities Index as a model for their generation of a College Characteristics Index (CCI), designed to elicit students' perceptions of press corresponding to the needs assessed by the AI. While Astin (1968) included some of the CCI items in the College Image section of his Inventory of College Activities, but subsequently moved away from perceptions of press, Stern and his students explored the factor structures of both the AI and the CCI (Stern, 1970), and Moos (1974a) based his Ward Atmosphere Scale (WAS) on the model of the CCI. The work of Moos is very instructive, though for reasons that will not be fully apparent until a later discussion of Stern's research. Particular attention is given to Moos' research here and at subsequent points in this chapter.

To develop the Ward Atmosphere Scale, Moos generated descriptive items from observations, books, and interviews, and sorted them into twelve categories, ten selected from Murray's and Stern's categories of environmental press, and two added to complete the coverage of the content areas identified.

> The choice of items was guided by the overall concept of environmental press (Pace & Stern, 1958); that is, an item had to identify characteristics of an environment which could exert a press toward Involvement, toward Autonomy, toward Spontaneity, and so on. (Moos, 1974a, pp. 37-38)

Successive forms of the WAS were administered to patients and staff in a variety of psychiatric wards, culminating in a normative sample from 160 wards in the United States and Canada. In this process the original twelve categories were reduced to ten, which in turn were grouped under three headings: Relationship dimensions of Involvement (incorporating affiliation), Support, and Spontaneity; Treatment Program dimensions of Autonomy, Practical Orientation, Personal Problem Orientation, and Anger and Aggression; and Systems Maintenance dimensions of Order and Organization, Program Clarity, and Staff Control. Each of the ten dimensions is represented by a subscale of ten items that intercorrelate more with each other than with the items of the remaining subscales.

The WAS and derivative schemes have been used extensively to produce profiles of different types of institutions, interpret specific ward environments, provide feedback to staff and to patients, and monitor program change. Moos reported that there are greater differences within types of treatment institutions, for example Veterans Administration or university sponsored hospitals, than among them.

> These results support the conclusion that specific characteristics of the ward treatment programs, rather than hospital administrative policies per se, are of critical importance in determining the actual treatment milieu. (Moos, 1974a, p. 61)

Closely similar procedures have been followed by Moos and his students to create a variety of other instruments, for assessing the climates of correctional institutions, junior high and senior high school classrooms, work environments, and still others. The variables Moos characterized as "relationship dimensions," and those he called "system maintenance dimensions," tend to be very similar across the different instruments, although, of course, the specific items for "support," "order and organization," etc., reflect the different particulars of the environments measured. Moos subsumed the "treatment program" variables of the WAS under a more general category of "personal development" dimensions, which vary somewhat more among instruments according to the functions of the different types of environments assessed.

Moos pointed out the parallels between the major variables of his and other researchers' schemes, for example between the Moos and Trickett (1974) Classroom Environment Scale (CES) and Walberg's (1969) Learning Environment Inventory (LEI), which has a relatively separate history. (See especially Insel and Moos, 1974.) The dimensions of the LEI and the CES have been related to a variety of cognitive and affective educational outcomes with comparable results. Anderson and Walberg (1974) summarized these for the LEI. Moos (1978) reported the following results from an administration of the CES and measures of student satisfaction in 200 junior and senior high schools:

> Students in control oriented classes were the least satisfied with the class, the teacher, and the amount of material they were learning. A similar pattern of results occurred in the structured task oriented classes and, to a somewhat lesser extent, in the unstructured competition oriented and affiliation oriented classes. Students were relatively highly satisfied with the class and the teacher in innovation oriented and supportive competition classes. Surprisingly, students in task oriented classrooms felt they were not learning much actual material; however, the class

> milieu may have led to higher expectations about the amount they should be learning. Finally, students liked each other more in classes which emphasized student-student affiliation. (Moos, 1978, p. 60)

These findings square with those of many other studies of classrooms (Grannis, Note 1) and thus give credibility to participants' perceptions of environments as an approach to understanding environment-person transactions. At the same time, Moos' conclusion that specific characteristics of ward treatment programs are of critical importance needs to be generalized to apply to classroom and other settings. These specific characteristics will only partially be picked up through surveys of participants' perceptions. The conditions that are perceived may involve unique constellations of people, their roles, and the physical properties of a setting. Live observation of the behavior in milieu may be required to go beyond the general parameters represented in instruments like the CAS or WAS.

The last category of systems reviewed by Moos is "Functional or reinforcement analyses of environments." The studies included here tend to be focused on the stimulus model or reinforcement systems contributing to a discrete domain of behavioral outcomes, for example Wolf's (1966) research on the conditions and processes in the home environment that are likely to influence the development of general and/or academic achievement. The variables measured by Wolf included the opportunities for verbal development, the nature and amount of assistance provided in overcoming academic difficulties, the kinds of work habits expected of the individual, and so forth. Wolf obtained correlations between the total rating of the home's intellectual environment and subjects' intelligence and achievement that were considerably higher than those typically found between social status and intelligence or achievement. Wolf, and Moos in turn, emphasized the potential of this approach, the specification of as many conditions as possible that could be expected to contribute to a press for the behavior concerned. Moos observed that a more general typology of conditions of this sort would lead to all the environmental phenomena with a potential for influencing individuals. This takes the matter back to the original definition of press.

In all this enumeration of environmental features, one must not overlook the most fundamental categories that students of behavior environments invoke, the "social" and the "physical" as domains of the environment. Usually, there is an implicit assumption that these aspects are being added to a third, the "cognitive" or "intellectual" domain ("rote" or "questioning," "convergent" or "divergent," etc.), which, at least in educational thinking, is exaggerated as a determinant of behavior when the social and the physical are not attended to. The relationships between the intellectual, the social, and the physical are crucial to an understanding of interactions between persons and environments. Why this is so is partly revealed by asking, simply, what is the basis of the distinctions between "intellectual," "social," and "physical"? (Cf. Bloom's [1965] "cognitive," "affective," and "psychomotoric.") For example, which of these domains does a book belong to? A book can be true or false, mine or thine, and set in large or small type. Its being an intellectual, a social, or a physical object, then, depends ultimately on its being the object of a judgment of one or another of these kinds. Without human, or possibly infrahuman, judgment, there would be no distinction between the intellectual, the social, and the physical. The study of the environment of behavior thus directs one to look at the relationships among all these domains from the standpoint of the participants' judgments, though one or another domain might be most explicit in the design or rationale of an environment.

This section of the chapter, on the variety of environmental features, has attempted to serve two basic purposes. First, it has pointed to some of the ways in which environmental variables are disclosed or generated by a conceptual framework, rather than, as sometimes is supposed, their representing simply a naive or untheoretical reading of the environment. Second, the discussion of what is only a fraction of the environmental variables that research has attended to should be sufficient to underscore even more strongly the question that concluded the section on how the environment presses, viz., how does the individual manage the complexity of environments?

Person-environment Interactions

That there are "main effects" of environments on human behavior is an assumption of environmental psychology, social ecology, and architecture, that has been reflected in various observations referred to in the previous pages, and that will appear in the studies selected for discussion in this secton. Main effects, as opposed to interactional effects, in fact dominate the literature; however, interactions were central in Lewin's and Murray's theoretical formulations. This is particularly the case in research that attempts to recognize the complexity of the environment through specifying a variety of environmental variables, for example the climate studies. To the extent that this more complex research does consider the possibility of person-environment interactions, one finds them couched in terms of a "congruence" model of interaction. This research and the congruence model will be discussed in later sections, with a view to sharpening the model.

The alternative to recognizing complexity is dealing with a few variables, especially under laboratory conditions in which other variables are presumed to be controlled. Increasingly in recent years, questions that have been raised through observation of complex environments have been converted into hypotheses for more exact investigation under controlled conditions. In such studies, it should be easier to look for interactions between person and environment variables. Some experiments, though still few relative to the total body of environmental research, have pursued this course. Obviously, these studies run the risk of oversimplification that Bronfenbrenner and Willems especially have emphasized. On the other hand, factors in behavior which are isolated under controlled conditions might subsequently be entered into the more complex calculations of a congruence model. The discussion here will presume this possibility. Indeed, the model to be used here to interpret experimental literature will later be subsumed under a congruence model.

The Environmental Docility or Susceptibility Hypothesis

Many of the person-environment interactions that this writer has identified in the natural or laboratory experimental research can be interpreted as variations on Lawton's "environmental docility" hypothesis. We will find reason later to rename this the environmental "susceptibility" hypothesis, but Lawton's wording will be retained for as long as it appears to be valid.

> A person may structure space and the objects within the space in an active manner, altering the environment in the service of his needs, or, conversely, he may vary his behavior as a function of the space and objects in it, adapting to a relatively fixed environment.
>
> We propose the general hypothesis that there is a relationship between the state of the organism and its docility in the face of environmental restrictions. That is, the more competent the organism--in terms of health, intelligence, strength, social role performance, or cultural evolution--the less will be the proportion of variation in behavior attributable to physical objects or conditions around him; let us call this the "environmental docility hypothesis." With high degree of competence, he will, in common parlance, be above his environment. However, reduction in competence, or "deprived status," heightens his behavioral dependence on external conditions. (Lawton & Simon, 1968, p. 108)

One must disregard at this point the possibly ethnocentric or culturally biased connotations of "deprived status." The congruence model to be developed later affords a way of correcting for this. "Competence" is to be construed here in the most general sense defined by White (1959), as referring to "an organism's capacity to interact effectively with its environment" (p. 297).

In the study from which the above quotation was taken, physical distance was selected as a crucial variable in the formation and maintenance of friendships. Lawton and Simon surveyed the residents of several homes for the elderly, a total of 1,163 subjects in different types of homes. There was a strong general tendency for subjects to name individuals on the same floor as their own, rather than on a different floor, among their friends. In addition, a composite of various indices of competency was associated with subjects' tendencies to travel to other floors to visit friends. Of these variables, subjects' mobility and health have the most transparent bearing on the outcome. Other variables--some more psychological like alienation, happiness, and independence, and others more social like contact with children, social activity, and relationships with peers--might be construed as effects of the environment as much as independent characteristics of the residents. (Recall, however, the person and the environment defining one another in Lewin's formulation.) The docility hypothesis is thus not strongly confirmed in these findings, but the study serves to introduce it.

A considerably stronger empirical demonstration of the environmental docility hyothesis is afforded by research on individuals' experience of pressure to participate in large and small schools. Barker and Gump (1964) made an inventory of all the behavior settings--extraindividual standing patterns of behavior with milieu--in a large and several small high schools. From a count of the number of nonclass activities--sports activities, dances, clubs, service, etc.--and a count of the students in each school, Barker and Gump calculated a ratio, S/A, of students available for participation in the activities of each school. They hypothesized that students in schools with lower S/A ratios would experience more pressure to participate in the activities of their schools. Since the number of activity settings decreased less in the smaller schools than the number of students, this translated into the prediction that students in the smaller schools would experience more pressure to participate than would the students in the large school. Student reports confirmed this main effect prediction. Willems, first as a part of the Big School, Small School study, and then in a replication with a similar set of schools three years later (Willems, 1967), added a person variable, "marginal" vs. "regular" students. Marginal students were defined as those most likely to drop out of high school, on the basis of IQ, previous grades, father's occupation, and father's and mother's education. In each study, equal numbers of regular and marginal males and females were drawn randomly from the populations of the large and the several small high schools. The subjects were individually asked, for each of a representative set of activities, "What, if any, were for you real reasons for or pulls toward attending this activity?" The coding of the responses subsequently recognized five categories of sense of obligation: Statements of felt general expectation to participate, of general loyalty, of specific obligation to help, statements of previously determined job or duty, and statements of obligation not codable in the first four categories. The first results of Willems' two studies are depicted in Figure 1.

When the responses were adjusted for reported leadership performances, the results depicted in Figure 2 were obtained.

The "regular" students' perception of pressure appears to have been more constant, one must assume as a result of internal factors, while the marginal students' perception was dependent more on the external circumstances of the school. What the internal factors might be is not revealed beyond the definition of "marginal" vs. "regular" students. However, the results in either Figure 2 or Figure 1 would support the docility hypothesis, since in both cases the marginal students are seen to be more vulnerable to the environment. In other words, a main effect is neither presupposed nor ruled out by the docility hypothesis.

Willems has pointed out to this author that more competent individuals can be observed to be more sensitive to intersetting variability, insofar as they adapt their behavior more appropriately to different conditions. (See Willems, 1976.) Does this contradict the docility hypothesis? It does not, in that it is attainment of desirable end states--being with a friend, participating in a community, achieving mastery of a task--that varies more for more docile individuals, precisely because their coping behavior and attitudes are less flexible. Further examples are discussed below.

Wicker (1974) cited a number of studies, including his own, in support of the following summary statement:

> Research has shown that members of small schools and churches, compared to members of large schools and churches: (a) enter approximately the same number of behavior settings, (b) enter a wider variety (more different kinds) of settings, (c) have more performances in the settings, that is, take responsibile roles more often . . . and (d) report more experiences of challenge, involvement, and felt obligation to participate. (Wicker, 1972, p. 500)

Wicker particularly has refined the concept of "manning" which underlies the study of participatory behavior in large and small institutions. On balance, the special susceptibility of some individuals to different manning conditions--Willems' finding--has not received nearly as much emphasis in the literature on this subject as the main effects of overmanning. One exception is an ingenious laboratory study by Wicker, Kirmeyer, Hanson, and Alexander (1976), who used groups of four male college students (n = 180) in a miniature car racing task that was variously designed to need two, four, or six people (undermanned, adequately manned, and overmanned conditions, respectively).

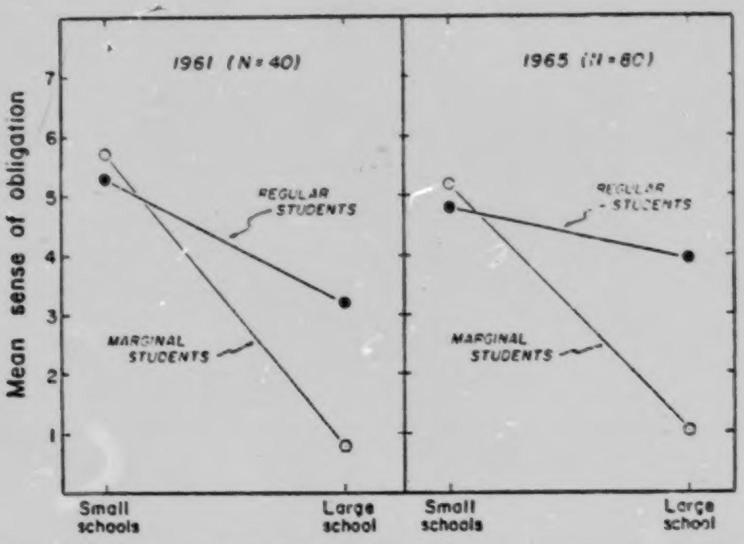

Figure 1: Mean numbers of responses indicating sense of obligation in 1961 and 1965.

From "Sense of Obligation to High School Activities as Related to School Size and Marginality of Student," by E. P. Willems, Child Development, 1967, 38, p. 1254. Copyright 1967 by the Society for Research in Child Development, Inc. Reprinted by permission.

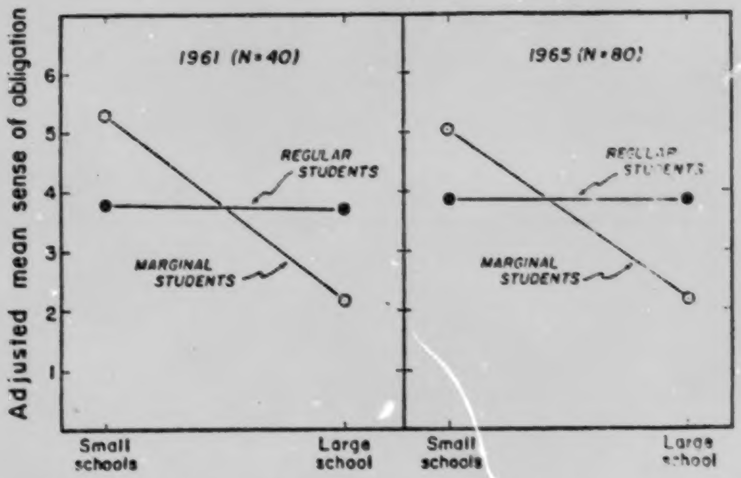

Figure 2: Mean numbers of responses indicating sense of obligation in 1961 and 1965, adjusted for numbers of performances.

From "Sense of Obligation to High School Activities as Related to School Size and Marginality of Student," by E. P. Willems, Child Development, 1967, 38, p. 1256. Copyright 1967 by the Society for Research in Child Development, Inc. Reprinted by permission.

> As predicted, greater degrees of manning produced weaker and more variable feelings of involvement with the group and its task. These effects were apparently due to differences in importance of jobs members held in the different manning conditions. Subjective experiences previously reported to vary with group size were found also to vary with degree of manning, suggesting that manning may mediate some group size effects. (Wicker et al., 1976, p. 251)

Wicker et al. investigated one person characteristic in this study, "Tolerance for waiting or inaction," estimated from a questionnaire administered before the racing car tasks. Those subjects who reported a higher waiting tolerance

> tended to have more experiences characteristic of members of undermanned and small groups, that is, to feel they worked harder, worked more closely with others, were involved and needed, had a voice in group decisions, and affected group outcomes. This relationship was somewhat higher for persons and groups which had been exposed to overmanning. . . . Conceivably, there is a threshold which must be exceeded before the tolerance for waiting variable begins to have much of an effect on subject experiences. (Wicker et al., 1976, p. 267)

This finding, too, fits the docility hypothesis. Subjects with a lower tolerance for waiting experienced less press to participate, perhaps one can say experienced more the feeling of not being needed, though these same subjects responded to conditions of undermanning more like the subjects with a higher tolerance for waiting or inaction.

The phenomenon of "learned helplessness" in the face of environmental difficulties is an area in which there has been substantial research, some of it exploring person-environment interactions. Seligman, Maier, and Geer (1968) found that animals given extensive pretreatment with unavoidable, inescapable shock tended to tolerate extreme shock after the contingency was changed and shock was made avoidable and escapable. In many cases, prolonged retraining was necessary before the animal began to respond on its own. Seligman et al. used the term "learned helplessness" to refer to "the learning or perception of independence between the emitted response of the organism and the presentation and/or withdrawal of aversive events" (p. 258). Dweck and Reppucci (1973), building on this and subsequent research with both infrahumans and humans, designed an experiment to relate learned helplessness to children's disposition to perceive internal or external locus of control over performance on intellectual tasks, as measured by the Intellectual Achievement Responsibility (IAR) Scale (Crandall, Katkovsky, & Crandall, 1965). Forty fifth-grade children (20 boys and 20 girls) were given successes (soluble block designs) by one adult (success experimenter) and failures (insoluble block designs) by another adult (failure experimenter), with trials from each being randomly interspersed. The experimenters did not know the children's scores on the previously administered IAR.

> A number of children failed to complete problems administered by the failure experimenter when her problems became soluble, even though they had shortly before solved almost identical problems from the success experimenter and continued to perform well on the success experimenter's problems. The subjects who showed the largest performance decrements were those who took less personal responsibility for the outcomes of their actions and who, when they did accept responsibility, attributed success and failure to presence or absence of ability rather than to expenditure of effort [as measured by the IAR]. Those subjects who persisted in the face of prolonged failure placed more emphasis on the role of effort in determining the outcome of their behavior; moreover, males displayed this characteristic to a greater extent than did females. (Dweck & Reppucci, 1973, p. 109)

Dweck and Reppucci related their findings to those of a number of other studies, for example Bialer's (1961) discovery that when mental age was held constant, internal subjects were more likely to choose to repeat uncompleted tasks than were more external subjects.

Cohen, Rothbart, and Phillips (1976) conducted an experiment in which 42 college students were pretreated with a computerized concept formation task that was rigged so that half of the students received contingent reinforcement for their responses, and the other half received noncontingent reinforcement, i.e., computer feedback that was independent of the correctness or incorrectness of their trials. The students had been previously identified as internals or externals from an abbreviated version of Rotter's (1966) Internal-External Locus of Control (I-E) Scale; internals and externals were assigned in equal numbers to the contingent and noncontingent conditions; and a yoking procedure was used to equate the number of trials and amount of positive or negative reinforcement the internals and externals received under the two conditions. Both internal and external noncontingent subjects performed more poorly on subsequent tasks requiring a problem-solving strategy. However, only externals showed helplessness effects on two non-problem-solving tasks, the externals requiring more time to complete (a) a color patch naming task and (b) the Stroop task, in which names of colors are printed in colors other than the color named and the subject must verbalize not the word but the color printed. A predicted similar effect was not found for a third non-problem-of this control. Surprisingly, however, the research does not appear to have linked subjects' attribution of control to anything other than experimental conditions, i.e., the research has not invoked the personality concept of locus of control. Glass and Singer (1972) did pioneering studies on the effects of differing forms of noise on both ongoing and subsequent task performances and physiological responses.[1] They found that noise produced initial arousal and interpersonal irritability, but that subjects tended to return to their prior state, i.e., to adapt, and to complete a task successfully even though the noise persisted. Glass and Singer observed more pronounced effects of task impairment and intolerance for frustration following the aversive-noise exposure accompanying the initial task. However, these effects were ameliorated if subjects perceived that they had control over the noise during the first task, i.e., were told that they could terminate the noise, even if they did not exercise this option.

Sherrod, Hage, Halpern, and Moore (1977) conducted a laboratory experiment in which subjects were given control over the initiation of noise, control of its termination, or a combination of control over initiation and termination. On an attention-to-detail measure, which occurred concurrently with noise stimulation, subjects' error rates decreased linearly as degree of control incrased. Likewise, on a post-noise measure of task persistence, subjects' performance rates increased linearly across the three conditions as degree of control increased. Sherrod et al. discuss Glass and Singer's suggestion that perceived control might facilitate task performance in stressful environments by reducing physiological overarousal or by reducing the overload on an individual's information processing capacity, and Cohen's theory that perceived control over environmental inputs allows a relaxation in an individual's monitoring of the environment for unpredictable stimuli. Neither of these interpretations, in the view of Sherrod et al., accounts for the improvement in performance resulting from adding initiation control to termination control, since no monitoring is contingent on initiation. The authors turn instead to more motivational theory, especially Seligman's theory of learned helplessness and deCharms' (1968) theory of personal causation, to argue that initiation control contributes to an individual's "general self-perception as a competent manipulator of initiation and termination. On an attention-to-detail measure, which occurred concurrently with noise stimulation, subjects' error rates decreased linearly as degree of control increased. Likewise, on a post-noise measure of task persistence, subjects' performance rates increased linearly across the three conditions as degree of control increased. Sherrod et al. discussed Glass and Singer's suggestion that perceived control might facilitate task performance in stressful environments by reducing physiological overarousal or by reducing the overload on an individual's information processing capacity, and Cohen's theory that perceived control over environmental inputs allows a relaxation in an individual's monitoring of the environment for unpredictable stimuli. Neither of these interpretations, in the view of Sherrod et al., accounts for the improvement in performance resulting from adding initiation control to termination control, since no monitoring is contingent on initiation. The authors turned instead to more motivational theories, especially Seligman's (1968) theory of learned helplessness and deCharms' (1968) theory of personal causation, to argue that initiation control contributes to an individual's "general self-perception as a competent manipulator of the environment" (Sherrod et al., 1977, p. 25). Clearly the work done so far on response to stress calls for research that includes a personality measure of locus of control.

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[1] A study with particular relevance to education is Cohen, Glass, and Singer's (1973) "Apartment Noise, Auditory Discrimination, and Reading Ability in Children," which found that children living on the lower floors of 32-story buildings situated near a major roadway showed greater impairment of auditory discrimination and reading achievement than children living in higher-floor apartments.

Studies of crowding have been linked to stress, and afford further leads on person-environment interactions. Two definitions of the phenomenon have been associated with different effects. Either the number of people in an assembly (social density), or the amount of space per individual (spatial density), can be emphasized. Baum and Korman (1976) hypothesized from a variety of previous studies that subjects in a large group (high social density) would respond to an unstructured interaction format with stronger perceptions of crowding, feelings of physical discomfort, and tendencies to withdraw, than subjects responding to a structured format. They hypothesized that spatial density would not be a critical variable when social density was high. Baum and Korman further hypothesized that in a small group (low social density), interaction structure would not affect subjects' responses as much as spatial density. They predicted that male subjects would respond more strongly than would females to high spatial density in a small group, perceiving more crowding, feeling more discomfort, and behaving more aggressively. All of these predictions were confirmed by Baum and Korman's experiment.

One can imagine that individuals would be differently susceptible to the structure variable in large groups. What is involved here is not identical with the achievement via conformance vs. achievement via independence variable that Domino (1968, 1971) used in studies of interactions between students' and instructors' styles (see below), though it might be related. That males were found in Baum and Korman's study, as in previous research (for example, Freedman, 1975), to be more aggressive in small groups with high spatial density, can be interpreted as their being more susceptible to male role expectations under these conditions. By implication, females, by not reacting so aggressively, are more prone to female role behavior under these same conditions. (Freedman's findings particularly suggest this.) Can one say that males and females are more liable to stereotyped, and thus possibly maladaptive, behavior in spatial crowding? The docility hypothesis would be compounded if, in addition, it were found that some individuals were more prone to sex stereotyped role behavior than others, in response to the stress induced by spatial crowding.

It is at this point that the limitations of the term "docility" are most apparent. Simplistically, "aggressive" behavior is not "docile." Withdrawal, too, is an adaptive behavior in a sense that docility does not imply. The concept of docility does not suggest the coping quality of behaviors that may yet be overly determined by the environment, in comparison with still more flexible behaviors. More generally, a hypothesis couched in terms of susceptibility might allow us to extend to various areas the general idea that the perceptions and behavior of some individuals are more dependent on given environmental circumstances than those of other individuals. For example, harkening back to the classroom situation in which discipline is a paramount concern, students tracked in lower achievement classes have been observed to be more prone to challenge their teachers with physical disruption and verbal abuse, but students tracked in higher achievement classes with the same teachers challenged in more intellectual, but otherwise more covert social and physical, ways. The teachers not only responded, but anticipated in kind (Metz, 1978). Leaving aside cultural interpretations, lower achieving students more generally might be more liable to be cast, and to cast themselves, in classroom roles that put them at risk, because they are less able to negotiate the situation in the more acceptable ways. My interpretation presumes that the higher achieving students could also challenge in more overt physical and social ways, as indeed they sometimes do, and thus that they have a more flexible repertoire of behaviors for dealing with the classroom situation--not just its intellectual tasks per se, but the problem of managing behavior in an environment that herds many children or youths together with one or two adults in a confined space over many hours (Jackson, 1968). The intellectual agenda of the classroom can be viewed as being a response to this problem of control, as much as it is a "reason for" teachers, and students, attempting to maintain control (Grannis, Note 1). Similar claims have been made about the program agendas of total institutions (Goffman, 1962). This, then, broadens the scope of environmental conditions to be examined for students' differential susceptibility, from those construed only in direct relation to the tasks of learning, to those that affect living in the environment of learning.

Let us simply notice that the significance of Witkin's field dependence-independence variable may turn on questions like those under discussion here (Witkin, Moore, Goodenough, & Cox, 1977). Superficially, the concept closely resembles the environmental docility hypothesis. Cronbach and Snow (1977) dismiss the concept as pertaining to a "deficit" rather than, as Witkin represents it to be, a "style." In their view, it is a proxy for intellectual strengths and weaknesses. Its being a style would, in Cronbach and Snow's view, be contingent on field dependence being associated with the accomplishment of some end, a social if not an intellectual goal. What is quite conceivable, especially, now, considering cultural factors, is that field dependence is a way of coping with the social conditions of the experimental test situation, or of adapting to the presence of authority more generally. At the same time that it accomplished this end, it could be detrimental to the intellectual performance required in the same situation, assuming that this performance called for intellectual flexibility. In the complexity of the classroom, students' initial dependence on the teacher's definition of the intellectual field, and nonintellectual rebellion when they cannot master the field, are not incompatible. More generally, a given individual might be differently susceptible to different aspects of a given situation. The docility hypothesis suggests ways of differentiating the problem.

Mehrabian's (1976) interesting concept of stimulus "screeners" vs. "nonscreeners" is somewhat related to the field independence-dependence concept. Screening is associated with lower, and nonscreening with higher, levels of arousal to external stimuli. Screeners are more selective in the stimuli they attend to, imposing more of a hierarchy on environmental input than nonscreeners. This concept, too, seems to involve something more than the "different roads to Rome" interpretation of preferential styles. A trade-off between sensitivity and selectivity is involved for the individual who is either a screener or a nonscreener.

Related observations can be made about teachers, and are very important to take note of here. On the basis of a range of studies, Fuller (1969) proposed a developmental conceptualization of teachers' concerns, from a preteaching phase that is quite vague about the classroom to an early teaching phase of concern with self--ability to control the class, content adequacy, evaluations, and so forth--to, finally, a phase of late concerns focused on pupil gain and self-evaluation as opposed to personal gain and evaluation by others. Fuller observed that a teacher could get "stuck" in the second of her three phases. From a more sociological and ecologicl perspective, it might be hypothesized that the basic conditions of schooling that constitute the problem of control ensnare many teachers in Fuller's initial teaching phase. However, teachers of a higher "conceptual level" (CL)--defined by Harvey, Hunt, and Schroder (1961) as a person's ability and disposition to conceptualize social problems of situations in more differentiated and flexible cognitive and evaluative terms (this writer's summary!)--have been found to have classrooms in which there was more differentiation, self-direction, and cooperation among the students. For example, the research by Harvey, Prather, White, and Alter (1966) suggests the possiblity of teachers being differently susceptible to the press of the classroom situation to exert control.

Let us notice that the environmental conditions that have been attended to so far in this examination of the docility or susceptibility hypothesis--spatial distance, population/setting ratio or manning, noncontingent vs. contingent reinforcement, noise, social density and social structure, and spatial density--are all salient variables within and between classrooms. The dependent behaviors or perceptions--high or low initiation and maintenance of friendships (or affiliation, including with a teacher), feeling of pressure to participate, learned helplessness, irritability, physical discomfort, withdrawal, aggression--all appear to be consequential for human development and learning. It would appear to be incumbent on research that has concentrated on other instructional variables to take these variables into account, perhaps beginning with the case study approach to the analysis of experimental contexts that has been urged by Cronbach and Snow (1977).

Let us just note at this point that the docility or susceptibility hypothesis is related to the "compensatory" model of aptitude-treatment interactions explicated by Salomon (1972). Salomon illustrated the latter model in terms of research on anxiety in learning. The difference between the susceptibility and compensatory concepts lies simply in the greater emphasis given in the former to environmental determination of behavior. However, an integration of the concepts and the research they invoke seems to be called for.

The Congruence Model

Like "susceptibility," as I shall call it from this point on, "congruence" implies a state and a process. Whereas susceptibility stresses a predisposition to environmental overdetermination, congruence typically suggests a match between person and environment that is optimal for the fulfillment of a need or purpose, or, short of this, an equilibrium that has resulted from accommodations between person and environment. Of course, an environment can be incongruent with a given need. The presence of a condition that some individuals can less readily cope with in attempting to fulfill a need is a special kind of incongruence. One could also say that an environment that is debilitating for its subjects serves a purpose of the agent maintaining the environment. "Congruence" thus has more than one face. In fact, it is the multiplicity of needs or purposes and environmental conditions that the congruence model, in its full complexity, attempts to deal with. It is a model, rather than a hypothesis, because the processes of equilibration it assumes are only partially verifiable in research. The test of the model is its heuristic value.

The concept of congruence has been invoked in environmental research to describe relationships between students (patients, etc.) and staff, between some students and other students, between students and the goals of a setting, between some goals and other goals or outcomes, between staff or program and the goals of the setting, between some and other elements of staff or program, and among all these elements within the system so defined, as well as between the system and its external environment. Figure 3 attempts to schematize these elements.

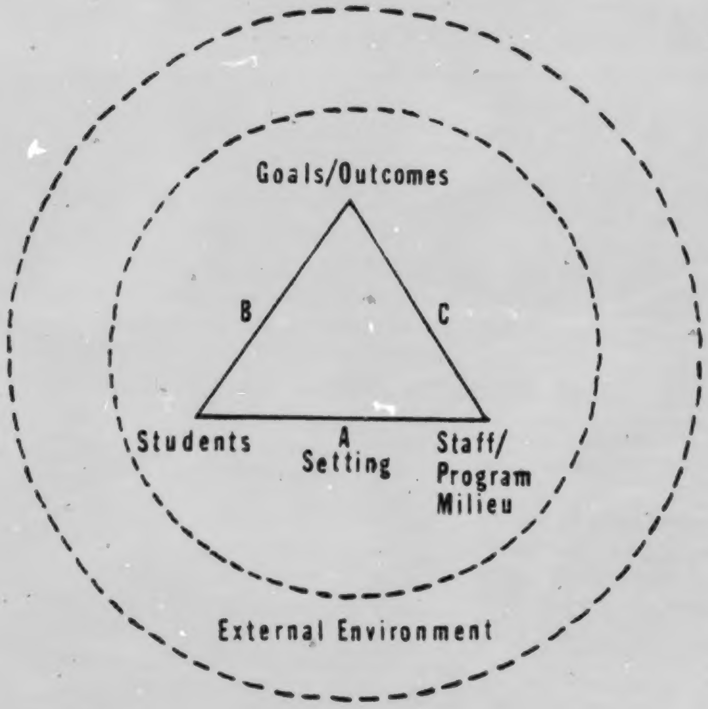

Figure 3. Scheme of the educational environment

Our intent in what follows is to indicate the kinds of research that have bearing on the different sides of Figure 3, not to attempt to represent this research completely. Some of the research referred to here is examined more fully in other chapters of this report. What is most important at this juncture in our paper is the structure of the relationships depicted in Figure 3. After a certain point, the figure will be seen to be inadequate to accommodate all the relationships that must be recognized, and a new figure will be introduced.

Each side of Figure 3 can be construed as a subset of the processes involved in the educational situation. They include transactions between students and staff and program elements (Side A), students' goal seeking and accomplishing or goal avoiding and failing behaviors (Side B), and staff and program goal defining processes (Side C). As is implied here for Side A, the processes represented on Sides B and C are also reciprocal, or transactional. "Transactional" here means that which was earlier denoted as behavioral interaction, what persons and environmental elements do to or with each other. Statistical interactions reflect these transactions at a certain, relatively high level of generality.

Processes can themselves be goals; for example, the process of students and staff adapting to one another's communicative style can be a goal in the educational environment. From another perspective, processes at time *k* may be the outcomes of processes at time *j*. What Figure 3 designates as "Goals/Outcomes" are the paramount anticipated results of activity in the setting.

The sides of Figure 3 will be discussed one at a time.

A. *Congruence between student characteristics and characteristics of staff or program milieu*. Among the clearest examples of research illustrating student and staff or milieu congruence are the studies by Domino (1968, 1971) and by Majasan (1972), which Cronbach (1975) cited as exemplars of aptitude-treatment interactions. First in a naturalistic study, and then in a manipulative experiment, Domino found that college students who indicated a preference for achievement via independence (as measured by Gough's California Psychological Inventory) obtained higher grades or test scores in classes taught by instructors who pressed for independent work than they did in classes where the instructors pressed for conformity. Students indicating a preference for achievement via conformity were more successful under the reverse conditions. Majasan found that initial agreement between students' and instructors' beliefs, vis-à-vis behaviorism vs. humanism, in a college psychology course, was associated with higher scores on objective tests at the end of the course than was disagreement between students and instructors.

A recent study by Rich and Bush (1978) used four measures to estimate intermediate grade pupils' social-emotional development (SED): teacher rankings of independence-dependence, leader-follower, active-withdrawn, and creative-routine functioning; frequency of selection in a peer sociogram; items adapted from Rotter's I-E Scale; and a rating of student dependence vs. independence derived from the students' indication of preferred classroom seating location in relation to the teacher. The study used Flanders' (1965, 1970) indirect/direct (I/D) verbalization ratio to identify teachers with indirect and direct teaching styles. Congruent combinations of indirect teachers and high SED students, and direct teachers and low SED students, produced significantly higher results than incongruent combinations, for all three outcomes measured after twenty small group sessions in reading: achievement, time at attention to task, and affective perception. Rich and Bush concluded that this study supports Hunt's (1975) person-environment congruence, or matching model of instruction. Rich and Bush's report that no significant differences between the congruent and incongruent groups obtained for sex, race, chronological age, reading level, or intelligence test scores, adds force to their conclusion, as Hunt's studies have been criticized for not adequately distinguishing between conceptual level (CL) and reading ability (Cronbach & Snow, 1977).

It need not be supposed that the matches described in these experiments were simply fixed at the outset of the courses. In each case, there must have been opportunity for negotiation or adjustment between students and teachers, perhaps made the more possible because the respective parties had, in all but the first Domino experiment, been deliberately brought within what we might call negotiable range. In the case of the mismatches, on the other hand, the individual differences at the outset might have become further polarized in the dynamics of class interaction. Mann's (1970) observation that a class over a long period adapts to a teacher's style is relevant here, at the same time that it is qualified by our remarks.

The closest Moos came to describing a specific person-milieu interaction in the WAS series of treatment program studies is an interpretation of two students which showed different degrees of anxiety produced by conditions that otherwise had similar effects.

> These differences probably occurred because the patients in the first study were psychiatrically sicker and more disturbed than the patients in the second. Whereas the sicker patients were made more anxious by an active treatment oriented program, the healthier patients welcomed it. (Moos, 1974a, p. 161)

Moos reported a similar interaction in the research of Sanders (1967, cited in Moos, 1974a), who varied the level of demand for social interaction in treatment programs for chronic schizophrenic patients. One program exerted no pressure for interaction, a second involved patients in housekeeping teams and required ten hours of group activities each week, and a third required the most interaction, in group therapy, patient government, and so on.

> The older male patients, and those with a longer duration of illness, manifested the most favorable social response and the most positive psychiatric adjustment in the maximally structured condition. . . . On the other hand, younger male patients, and those with a shorter duration of illness, generally responded less favorably to [strong] socioenvironmental treatment. Apparently some of these patients were disturbed by the interpersonal intimacy with members of both sexes which was demanded by the treatment program. (Moos, 1974a, pp. 11-12)

For all of the examples of interactions introduced so far to illustrate congruence and incongruence, a distinction can be made between the nature of the conditions that proved to be debilitating for some subjects, and the conditions that the susceptibility hypothesis identifies as debilitating. In the latter cases, there is no presumption that the conditions in question--spatial distance, overmanning, noncontingent reinforcement, noise, etc.--would be especially favorable to any substantial category of persons, though one might imagine situational exceptions to this. Rather, some persons are more susceptible to their generally debilitating effects than are other persons. Again, these cases can be subsumed under the general congruence model. However, the examples introduced in the present discussion of congruence do happen to be ones in which different staff or milieu conditions are each appropriate for different subjects. A qualification to this is that in the Moos examples, the treatment outcome might have been somewhat different for the different patients, a matter that Moos does not discuss in relation to these subjects.

A different pattern is revealed by another of Moos' studies (Nielson & Moos, "Exploration and Adjustment in High School Classrooms.")

> The social psychological adjustment of 1750 high school students with different exploration preferences was examined in classrooms with different social exploration climates. Exploration preference was assessed by the Edwards-Kelly Exploration Questionnaire; exploration climate by the Moos and Trickett Classroom Environment Scales (CES). Overall, students reported higher levels of in-class satisfaction and

> socio-emotional adjustment in high social exploration climates. Among students in the high exploration climates, those high in exploration preference were more satisfied and better adjusted than those low in exploration preference. Among students in the low exploration climates there was no statistical difference between those high and low in exploration preference. (Nielson & Moos, Note 2, from the Abstract)

In this case there is no reason to suspect that the classrooms low in exploration climate would be particularly congruent with the needs of students low in exploration preference. For example, the low classrooms might have been characterized by arbitrary teacher authority, which favored the needs of no students in the population. In their discussion, Nielson and Moos call attention to the fact that the investigation was conducted in naturally occurring classrooms, not in classrooms experimentally designed. A contrived experiment might have paid equal attention to the design of conditions especially appropriate to the low exploration preference students.

This last study (and possibly the Moos and Sanders studies above) shows an ordinal, rather than a disordinal, interaction. It is very plausible that these would be discovered more frequently than disordinal interactions in found environments. Only a minority of classrooms, at least, have been designed for students who are exceptional in some way (in the broadest sense of "exceptional" rather than superior), and the higher valuing of one or the other pole of a contrast between students, in this instance the higher valuing of "exploratory preference" in the culture of educational designers, decreases the chances of finding classrooms explicitly designed for students at the opposite pole. This can be related to the findings of Brophy, cited by Cronbach and Snow (1977), that "modern" educational techniques--opportunity for self-direction and a supportive-spontaneous teaching style--appear to produce superior results for children from well-to-do homes and inferior results with poor children. Somewhat similarly related, but cast in more cultural terms, are the findings of a number of sociolinguistic studies, especially Boggs (1972), Philips (1972), and Lein (1975), which have called attention to the contrast between the individually oriented interactive style of the standard classroom and the collectively oriented interactions of minority children in their own subcultural settings. The children in the above mentioned studies, native Hawaiian, American Indian, and migrant American black, were found to be loath to compete against one another in the presence of an adult authority, specifically in the language game of the standard classroom, though they competed with one another in peer groups not under an adult's authority. These studies suggest the value of developing new classroom styles that are less individually competitive, and more collective, than the styles most commonly found in American classrooms.

Negotiation or adjustment, and design, have been suggested so far as factors contributing to congruence between students or patients and staff or milieu. Another factor is selection, which one would expect to operate more strongly in adult environments, to the extent that adults have more control over which courses, schools, or other educational or therapeutic environments they enter, or, from the staff side, which clients are accepted. Astin (1964) found that characteristics of college freshmen were highly related to college characteristics; for example, students who were more able, more highly motivated, and more scientifically inclined tended to enroll in colleges with intellectual environments but not in colleges with social environments. Astin speculated that this was the effect of a combination of self-selection and college-selection factors. Astin and Panos' (1969) finding that 44% of the college students they studied either transferred to another institution or temporarily or permanently dropped out of education implies a further selection process.

Moos invoked all the factors enumerated above to account for patient-staff congruence in treatment environments, specifically in patient and staff perceptions of the environments. (See also Moos, 1976b.) The various instruments Moos and his co-workers have developed for describing participants' perceptions of the "real" environment of one or another institution each have a counterpart instrument that rewords the instructions to ask about an "ideal" environment. Thus from one study that administered both the real and the ideal forms of the WAS and a related instrument, COPES (the Community Oriented Programs Environment Scale), in 23 state hospital programs, 16 American community-based programs, and 18 British community programs, Moos concluded the following:

> Average patient-staff congruence with regard to perception of the [real] environment is substantial for both samples of community-based programs, and it is moderate in the state hospital sample. Although patient-staff agreement varies widely from program to program, there is, on the average, much greater agreement than we would expect to obtain by chance. The extent of agreement might be utilized as a measure of the development of a program culture. Perhaps a more surprising finding is the relatively high degree of patient-staff value [ideal] congruence exhibited in all three samples. The average value congruence is extremely high in both samples of community-based programs and quite substantial in the state hospital programs. Programs differ considerably in their extent of value congruence, but again the average congruence is much greater than we would expect to obtain by chance. (Moos, 1974a, p. 305)

The fact that substantial numbers of patients drop out of programs very early in their treatment, the influencing of behavior by co-patients and staff, and patients' accommodation to the value possibilities of a given environment, are all suggested by Moos as possibly contributing to these congruences.

In various passages, Moos implied that he was using the ideal perceptions as an approximation to statements of needs. In this way his model moved toward Murray's. Moos had not, however, made a substantial effort to look for person-environment interactions in his various studies. Two exceptions to this are the Nielson and Moos study discussed above, and a study by Finney and Moos (Note 3) that Moos transmitted to the present author in response to an inquiry about his views on the problem. In this latter study,

> alcoholic patients from five, heterogeneous, residential treatment programs were empirically grouped into four high and four low social competence clusters. Within each social competence category, clusters were differentiated by social-psychological resources (high, medium, low) and family press to drink. The typology was related to background, intake, and outcome variables. A significant association between types and treatment programs was obtained, but an intensive search for patient-program interaction effects yielded no significant results. There was also no evidence that patient types sought, or were assigned, differential therapeutic regimens in the five programs. (Finney & Moos, Note 3, from the Abstract)

The typology of alcoholic patients does seem to be an advance over the less differentiated typologies of earlier research that Finney and Moos review. However, there are a number of grounds for thinking that further research might be more successful in identifying type- or person-treatment interactions. Finney and Moos pointed to one of these, the possibility that supplying programs with the information about the patients that is organized in the typology might lead to more specific treatments for patients. In the following passage, Finney and Moos suggest further lines of inquiry:

> One reason for the lack of significant interaction effects may be that patients who are not well-suited for a particular program are screened out at intake, or quickly drop out of the program. Another factor may be the heterogeneity of treatment within programs. Each program offered a number of therapeutic activities

> (e.g., group counseling, AA meetings, anti-depressants) and, to some extent, patients could "tailor" specific regimens to match their own needs or preferences. (Finney & Moos, Note 3, p. 20)

Finney and Moos investigated the latter possibility computing non-orthogonal, two-way analyses of variance between, on the one hand, 11 treatment experience variables and ten dimensions from COPES, and, on the other, the patient types. Only one interaction effect reached statistical significance. Here, however, still other questions can be raised. Finney and Moos also found that the seven dimensions on which the typology was based yielded somewhat better predictions of patient outcome than the eight resultant types, and it might be inferred that treatments and analyses articulated with these dimensions singly or in limited combinations would, at least initially, be more productive than treatments that attempted to orient to the whole gestalt of patient types. For example, might not there be a relationship between patients' history of social functioning (one of the initial patient dimensions) and program press for involvement and spontaneity?

The problems of trying to deal empirically with large sets of individual needs and environmental press are particularly evident from the research of Stern, who, of all the students of human environments, pursued the concept of congruence to the greatest lengths. Stern, Stein, and Bloom (1956) first operationalized Murray's needs-press model in an institutional context through a clinical conference technique to analyze small numbers of subjects. Students' beliefs and other personality attributes were compared with faculty's characterizations of the ideal student, i.e., the student role. Predictions of students' success based on congruence between their personality and the role depicted by faculty tended to agree with faculty judgments of students. Later studies moved to administering personality assessment instruments to larger numbers of subjects. In this context Stern, Stein and Bloom created the Activities Index, which with its many derivatives, including the Collge Characteristics Index, has become one of the major instruments of research on educational and other institutional environments. The AI today is a self-administered instrument of 300 items distributed among 30 scales of ten items each. The scales, all based initially on Murray's personality scheme, include abasement, achievement, adaptability, affiliation, etc. The instrument requires "like-dislike" responses to items such as "Suffering for a good cause for someone I like," "Setting goals for myself," and "Meeting a lot of people." Stern, Stein, and Bloom used the original AI to identify a population of "stereopathic" students who appeared to be less well adapted to the demands and opportunities of the college of the University of Chicago, and who indeed tended to leave the college at the end of their freshman year. In this study, however, there was no direct measure of the environment of the college.

Pace and Stern (1958) took the Activities Index as a model for their generation of the College Characteristics Index. Items describing features of a college environment were created for each of the 30 themes represented in the needs scales of the AI. Thus "In many classes students have an assigned seat," and "Students must have a written excuse for absence from class," are items from the "order" scale of the CCI. This construction of the CCI implied a definition of press that Stern later made explicit, the "taxonomic classification of characteristic behaviors manifested by aggregates of individuals in their interpersonal transactions" (Stern, 1970, p. 8). This represented a narrowing of the range of press from Murray's lists, which included potential influences of the physical as well as the social environment.

Pace and Stern's initial findings were like straws in the wind. In a statement that both hearkened back to Stern, Stein, and Bloom's original position, and prophesized the future directon of Stern's research, they wrote:

> It is possible that the total pattern of congruence between personal needs and environmental press will be more predictive of achievement, growth, and change than any single aspect of either the person or the environment. (Pace & Stern, 1958, p. 276)

While Pace and others, notably Astin, and more recently, Moos, shifted to research that emphasized the environmental side more than the needs side of the model, Stern persisted in trying to develop the two together. Stern's (1970) interpretation of his own and his students' research provides the basis for our summarization here. A study by Berquist (cited in Stern, 1970) employed both the AI and the CCI and found that need-press congruence calculated for each student was positively associated with satisfaction in college. Froe (cited in Stern, 1970) found that need-press congruence was negatively associated with working up to ability, a result that seemed to reflect the fact that there was no dominant press for academic pursuits in the culture of the particular college sampled for his study. Stern took notice of several other studies of need-press congruence, and commented on the whole set that

> none of these studies was able to resolve satisfactorily the technical problems involved in relating needs to press systematically. Despite their common conceptual base, the two sets of measures [AI and CCI] cannot be reconciled with one another in a simple scale-for-scale correspondence of variables of the same name. (Stern, 1970, p. 192)

Stern presented a case study of a single student whose AI profile and CCI expectations profile showed marked differences from her classmates' median needs and expectations of the college environment (at the onset of the freshman year). Stern analyzed the case in such a way as to suggest what actions might have been taken early in the freshman year to provide a compatible roommate, place the student in a department congenial to her interests, etc. However, it was an ex post facto (ex post disaster!) analysis, and Stern observed that timely and effective intervention would be conditional, first of all, on an efficient technique for screening all students' protocols on their entrance to college.

Stern traced several steps toward a solution of this problem. He presented data to show that students with certain needs tend to congregate in colleges with certain kinds of press--a congruence that obtains even though the first order AI and CCI factors are independent of each other. Therefore, it is necessary to define the dimensions of the college environment in terms of a composite (interaction) of its consensual environmental (beta) press and the aggregate needs of its students. A method of sampling and factor analysis to accomplish this was applied by Stern to AI and CCI data from 55 postsecondary schools and yielded five factors--labeled "expressive," "intellectual," "protective," "vocational," and "collegiate"--each of which Stern characterized as a basic dimension of college (or other postsecondary school) culture. Profiles of different categories of schools--independent and denominational liberal arts programs, business administration and engineering schools, etc.--convincingly suggested the power of these factors to describe school cultures. Stern then analyzed in these terms the data of the case study alluded to above, to show that the subject did not, when compared with other women in her college, differ much in the needs component of her composite profile, but differed greatly in the press component, her expectations of the college environment. Stern remarked that the information yielded at earlier steps in the progression of analyses, which revealed the needs and press dimensions more distinctly, could not simply be replaced by the advanced, more reductive analyses. In the end, he seems to have created a system of concepts and techniques with great potential for identifying mismatched students, probably through a method that would combine computer scanning of composite profiles with the clinical conference technique that Stern, Stein, and Bloom first resorted to, and that Murray had used before them. This qualification, however, points to a limitation of all the work in this tradition, including much of the research of Moos and his associates. When data characterizing environments are gathered from the same respondents whose responses to the environment are in question, the possibilities for disclosure of person-environment interactions are likely to be weakened.

This discussion of the congruence between student characteristics and the characteristics of staff or milieu has been considerably more extensive than our remarks will be on the other sides of the schematization in Figure 3. It has served to emphasize certain of the processes involved in the construction of congruence, some of which the reader can now link to the earlier discussion of how the environment presses. Our argument has particularly brought us more than once to the realization that the individual person, not completely described or accounted for by any combination of general variables, must somehow be incorporated in the congruence model. We shall turn to this after indicating the nature of the other sides of our first schematization.

B. Congruence between student characteristics and the goals or outcomes of the educational environment. The characteristics of students that are most directly pertinent here are abilities and interests for or in the subject matter and performances that are the manifest object of an instructional setting. If this wording seems overly precise, its intent is to focus on a narrower meaning of aptitude than the one reflected in Cronbach and Snow's definition of aptitude as "any characteristic of the person that affects his response to the treatment" (Cronbach & Snow, 1977, p. 116). It might be that a latent objective of employing independent learning strategies for instruction in arithmetic is to develop the learner's capacity for independent learning per se. However, arithmetic is likely to be the more manifest object of instruction in this case. To the extent that independence was itself the objective, as for example in Hunt's (1975) strategy of establishing instructional conditions at one stage higher than a subject's CL in order to induce the development of CL itself, this development would be represented among the goals at the apex of Figure 3. Different layers of goals, some more manifest and some more latent, are very common in instructional situations. It is for the purposes of analysis that they must be distinguished here.

Cronbach and Snow used this narrower definition of aptitude in the many cases where they reported that initial aptitude for a given task measured as the outcome of different treatments correlates with success on the outcome measure. Thus in almost all cases reviewed by them in which programmed instruction was contrasted with conventional instruction, initial "aptitude" (here translate "ability" and "interest") for the material to be taught--entry level performance in reading, arithmetic, or whatever--appeared as a main effect. The most frequently declared purpose of searching for interactions along side A of our Figure 3 is to reduce the variance in learning attributable to side B. The same observation applies to attempts to establish congruence along side C, though here one is concerned with interactions between the conditions of instruction and different educational goals or outcomes. Mastery Learning (Bloom, 1976) has as its purpose the reduction of variance attributable to initial ability and interest (or motivation toward the subject of learning).

In the several studies discussed at the outset of section A above--Domino (1968, 1971), Majasan (1972), and Rich and Bush (1978)--it was generally assumed, and in some cases explicitly stated, that the different student and teacher styles or beliefs were equally appropriate for the achievement of the goals of the instruction, so long as the styles or beliefs were congruently matched with each other. Domino's (1971) finding that on an outcome measure of originality the independent students had an advantage no matter what the instructor's style--the only outcome measure that did not show the predicted aptitude-treatment interaction in this study--is the exception that demonstrates the rule under discussion here. Where originality is taken as an instructional goal, one expects that initial aptitude for originality will correlate with the outcome, i.e., that congruence between aptitude and goal or outcome will contribute to realization of the goal. To take a different example, the Strong (1969) and Kuder (1964) occupational interest inventories allow an individual to compare his or her interests with those of persons in different occupational areas, in order to establish or clarify the individual's occupational goals. Another quite different example is afforded by Olds' (1976) finding that critical for the achievement of a child acting as tutor of a younger child (the emphasis here is on the achievement of the tutor) was "a close match between the learning needs of the tutor and the skills that he is teaching the younger child" (quoted from Bronfenbrenner, 1976 p. 191). The needs of the tutor would be construed at the Staff/Program Milieu corner of Figure 3 when the achievement of the younger child was in question, but they are shifted to the Student's corner to analyze the tutor's own achievement. The phrasing of the matter in terms of a "close match" invokes a point that was made earlier with respect to the match between students' and teachers' styles or beliefs, that congruence obtains when the discrepancies in question are negotiable, not simply when there are no discrepancies. This applies both to the programmed instruction principle of setting tasks at the leading edge of a student's competence, and the developmental principle of establishing an environment that is just one level above the conceptual (see D. Hunt, 1975) or moral (see Kohlberg, 1963) level of the student's present development.

As simple as they might seem to be--entry- and exit-level aptitude being the most commonly assumed and the most frequently demonstrated relationship in instruction--the distinctions Figure 3 represents are not always clear in research on aptitude-treatment interactions. Recent research discussed by Snow (Note 4) is a case in point, one that is all the more important because Snow appears to be on the track of a quite fundamental set of variables in aptitude-treatment, or person-environment, interactions. Snow interpreted a variety of studies in terms of Cattell's (1971) concepts of crystallized and fluid abilities. Crystallized ability seems to lend itself to relatively long-term adaptation based on accumulated verbal and quantitative knowledge and skill, whereas fluid ability appears to be more pertinent to short-term adaptation based on abstract, often nonverbal reasoning and some spatial and figural performance. Consider the following statement in which Snow applied these concepts:

> IPI [Individually Prescribed Instruction] is a system of individually-paced instruction relying on specific pretests, geared to carefully specified objectives and sequenced content, with frequent checkpoints as guides and feedback on learner progress, plus mastery tests for each unit. As such it combines many features of the kinds of treatments found in past research to help lower ability learners. The ATI interpretation seems to be that IPI structures learning activities in some detail, doing for lower ability students what they may not be able to do for themselves, i.e., compensating for an inaptitude by removing much of the organization and strategic burden, and providing careful control over learning activities, attention, persistence, and encouragement. It is "directed" learning to a far greater extent than is typical of conventional teaching and thus may remove the assembly and control burdens that the latter situation demands of each learner. In doing this, however, IPI may be dysfunctional for the more able students, who can organize their own learning; they already possess efficient assembly programs for the cognitive activities required by conventional instruction, so they seem better off with the conventional situations in which they can easily keep up and perhaps move ahead. In effect, they are exercising and capitalizing upon prior assemblies they are already comfortable with. Whether the apparent dysfunction for them should be attributed to cognitive interference, or motivational "turn-off," or both. or other factors, is unclear. In any event, ATI analysis demonstrates once again that no one instructional treatment is best for everyone even one that is to some extent individualized. (Snow, Note 4, p. 17)

What is not clear in this and other passages of Snow's paper is whether or not the students under the two contrasted treatments, in this case IPI and conventional instruction, might be learning different concepts and skills, or different extensions and applications of their knowledge. Perhaps some students have a greater aptitude for instructional outcomes that could be characterized as more crystallized or more fluid (side B), or perhaps different treatments lend themselves better to one or the other type of outcome. The latter possibility is in fact a matter of great contention between the proponents of different instructional strategies. Weikart (1976) has argued that the tests mainly relied upon in the evaluation of Project Follow Through did not sufficiently tap the abilities that one might here characterize as more fluid. The fact that Stallings (1973) found that performance on the Ravens Progressive Matrices, a test that Snow linked with fluid ability, was associated with more "open" or learner-directed classroom conditions, as opposed to more teacher-directed conditions, adds fuel to this fire. Our own view both agrees with Weikart and asks whether the California Achievement Tests used for the principal Follow Through analyses, or similar tests, might draw upon both crystallized and fluid abilities in ways that are not discriminated by the tests. If a pupil could arrive at the correct test answers by different routes, then a different test is called for to understand the various interactions. The IPI studies cited by Snow did find disordinal subject-treatment interactions, but these studies assumed that the same abilities were being tested under the various experimental conditions. Crystallized and fluid learning outcomes must be more adequately distinguished for a full comprehension of the problem.

Any reader of Snow's paper would probably conclude that the above is not representative of his thinking. Snow presented a figure that displayed a triangular relationship between different aptitudes, treatments, and outcomes, just as in our own Figure 3, which was derived independently. Snow discussed "A-O relations" (our side B), concluding with respect to crystallized and fluid abilities, "The distinction then is between long-term assembly for transfer to familiar new situations vs. short-term assembly for transfer to unfamiliar new situations" (Snow, Note 4, pp. 14-15). In a later passage, Snow observed the following:

> What constitutes a "new" learning situation is not really clear. But one can predict that as an instructional situation involves combinations of new technology (e.g., CAI, or television), new symbol systems (e.g., computer graphics or artistic expressions), new content (e.g., topological mathematics or astrophysics), and/or new contexts (e.g. independent learning, collaborative teamwork in simulation games), G_f should become important and G_c less important. (Note 4, p. 34)

We are simply underscoring the necessity of maintaining the distinctions recognized in this passage, throughout discussions of aptitude-treatment interactions or, to use Snow's own, more valid phrase, "A-T-O relations."

C. Congruence between staff or program milieu and treatment goals or outcomes. This is the side of the congruence problem that the Barker school of ecological psychology has paid particular attention to. The concept of "synomorphy" is most often illustrated in terms of the fittingness of physical and social arrangements to the goals of behavior settings. Thus a congregation's sitting in benches arrayed before and below a preacher orients them to his (or His) message. That the benches, the kneeling platforms, are cushioned or not can be related to the amount of comfort one is expected to experience in the situation! The analogy to classroom architecture is not at all farfetched. Dewey had this to say about it in The School and Society:

> Some few years ago I was looking about the school supply stores in the city, trying to find desks and chairs which seemed thoroughly suitable from all points of view--artistic, hygenic, and educational--to the needs of the children. We had a good deal of difficulty in finding what we needed, and finally one dealer, more intelligent than the rest, made this remark: "I am afraid we have not what you want. You want something at which the children may work; these are all for listening." (Dewey, 1900, p. 48)

Wolf's (1966) research on the relationship between children's measured intelligence and achievement and the press of the home environment for intellectual achievement, discussed earlier in this chapter, is an example of congruence between treatment milieu and outcome (or, strictly speaking in this case, correlate, since children's own intellectuality may also contribute to the press of the environment).

Any one of the environmental features that were related earlier to different characteristics of students or patients can be related to different treatment goals and outcomes. This applies not only to the immediately preceding discussions of congruence along sides A and B of our Figure 3, but to the earlier discussion of the susceptibility hypothesis. Without reviewing all of the variables again, the analysis here must point to further complications. Spatial distance generally presents an obstacle to communication and to affiliation. However, there will be occasions when the educational setting needs to establish spatial distance, or barriers or boundaries, in order to accomplish a goal that is incompatible with affiliation in the immediate context. An obvious example is the need to establish in the home a study space that is away from the television set, which itself overcomes distance for communication. On the other hand, the same child may need to be near enough to another member of the family to be able to get help when it is needed, or simply to feel the support of an affiliate during a difficult or unwanted task, for which the optimal setting might be one in which the nearby member of the family is engaged in a comparable task. One of my children prefers to do homework in a room in which his father or mother is also "working." I observed a different situation in an alternative secondary school where adolescents did not want their friends to see that they were reading third- or fourth-grade level books, and so were seated in carrels that had been constructed to afford this special privacy. It is hard to imagine an educational goal for which overmanning would be an appropriate condition, or an educational goal congruent with noncontingent reinforcement. On the other hand, crowding, especially high spatial density, appears to be as fitting to some goals as it is not to others. When children are crowded around a teacher for the telling of a story, the "density heightens intensity" principle seems to be invoked. In this case the teacher must balance the desired effect against the unwanted or unintended possibility that conflicting affective or behavioral tendencies, for example competitiveness, will be heightened in the situation.

The fittingness of different milieus to different outcomes can be further illustrated by discussion of an environmental feature that has been mentioned only in passing so far, the presence or absence of tangible objects of different qualities. Following Goffman (1962), gerontologists have paid attention to the demoralization that can result from not allowing an individual to retain personal objects of special significance, one's own clothes, toilet articles, mementos and keepsakes, etc., upon entry to institutionalized care. This phenomenon has its parallel in classrooms, while a more subtle matter is involved in the special significance open educators attach to "found" or teacher- or child-made materials, as opposed to the more impersonal commercial materials, including even those manipulatives manufactured for open or activity classrooms. Again in gerontology, Lipman and Slater (1977) have designed residences for the elderly in which the preparation and serving of meals, among other activities, would be carried out as much as possible by the residents themselves, mixing the more and the less competent residents, in part to enhance the interacton that takes place around the objects of these activities. Outside of school, young children's interactions are almost invariably mediated by physical things, the toys and found objects, spaces, and surfaces of children's play. These things yield "objective" feedback, and they serve as props to sustain role taking in fantasy activities. Physical things are essential to the social order among children that the classical kindergarten recognizes. Physical things, however, have the potential of confirming or disconfirming an unlimited variety of actions taken upon them. Blocks can be weighed, stroked, thrown, piled on top of one another, arranged in geometric patterns, etc., each with consequences that match or fail to match expectations. Many educational goals, however, particularly those measured by conventional tests of academic achievement, (a) entail operations on symbols, and (b) involve a restricted set of operations. It is for both of these reasons that there is a strong shift away from the use of manipulatives toward almost exclusively symbolic materials between kindergarten and third grade, as Goodlad and Klein (1970) found in observations of a large sample of classrooms in this range. Piagetian educators object to this on the grounds that it is necessary for children to develop schemata through operations on concrete objects before, or in conjunction with, the children's internalization of the operations. However much this may be disputed, it remains clear that by removing concrete objects from the classroom, the rules that govern young children's interactions are changed. Ross, Zimiles, and Gerstein (1976) found a much higher rate of child-child interactions, and a higher proportion of teacher-child interactions initiated by the children, in a set of open primary grade classrooms than in a comparison set of traditional classrooms. Although the authors did not make the specific connection suggested here, they reported substantially more time spent in settings with manipulative materials in the open classroom than was spent in the traditional classrooms. The absence of objects requires that new controls be established in the classroom, typically ones that involve a heavier imposition of adult authority, with or without systems that manage symbolic materials in relation to specified objectives, most often workbooks, and in a variety of cases more complex systems like IPI. Thus the problem of designing a milieu that is congruent with educational goals can involve conflicts between different goals--say in this case the children's academic test performance and social competence--at one and the same time. The nature of the choices and the potential conflicts is the object of the discussion that follows.

Grannis (1975) has argued that control over learning performances tends to be congruent with control over outcome performances, and thus the optimal conditions for a given learning will be those that are controlled in ways approximating the controls assumed in the goal of learning. The analysis distinguishes between control by self, control by other, and control by self and other jointly. It is these concepts that were translated into the categories for analysis of settings in differently structured classrooms (see Grannis, 1975). At a given time in the classroom, a learner can have an open, a closed, or a limited set of options for activity. The learner can be pacing the activity independent of the teacher, the teacher can be pacing the activity, or the teacher can be moving in and out of the learner's presence, mixing his or her timing of the activity with the learner's own timing (and other processes, such as quality control, entailed in the teacher's presence or absence). Again, the learner can have access to materials with unrestricted feedback, such as manipulative objects; the learner might have no materials, or materials with no explicit feedback, for example, a worksheet without an answer margin or page to confirm the learner's answers; or the learner might be provided with restricted feedback materials, for example, the same worksheet with an answer column. The interaction between learners, the specification of the steps of the activity, and the initiation and termination of the activity, are among the other processes or conditions of activity that can be analyzed in these ways. The analysis also distinguishes three classes of educational goals--goals of community, individuation, and competence. Community is held to entail the greatest degree of control by a collective other, individuation the strongest control by self, and competence a joint control by a collective other and the self. Examples of community goals include the observance of customs and the learning of significant names and symbols, not the least of which in our own culture are the names of numbers and the letters of the alphabet. Individuation includes self-expression, exploration, invention, creativity--the various performances in which there is the greatest emphasis on the individual's own criteria for thought and action. Competence, in this analysis, refers most clearly to the mastery of the concepts, skills, and attitudes of a discipline or craft. The argument, then, is that control by the collective other, including the individual learner as a member of the collective, is most congruent with goals of community, that control by learners as individual selves is most congruent with goals of individuation, and that joint self-and-other--more narrowly, joint learner-and-teacher--control is most congruent with goals of competence.

The passage early in this chapter (p. 4) on the press of a setting for ethnic unity can be understood further in the light of the present analysis of congruence between the control of process and outcome of a setting. The following passages from Grannis' 1975 analysis bear repeating in this context:

> The sense of community is most intense in those settings which all the members of a community participate in together. Individuals in these settings are oriented to a common focal point in space-time (Fraser, 1968; MacLuhan, 1962). The pattern of participant interactions with one another and with symbol-vested objects creates and renews common meanings, articulating the relationships of the familiar and the strange, the joyful and the sad, the safe and the dangerous (Turner, 1969). Outwardly, the collective other controls through specification of the time, the place, the furnishings, the participants, and the events of the educational settings. That is, the other controls options, pacing, materials feedback, and participant interaction, by the conscious design of community representatives or through the enactment of time-honored rituals.
>
> Inwardly, the community maintains control because the most significant elements of any group are those whose meanings generate a unique response within the collective. The same signs and symbols, names, gestures, stories, and ceremonies that were mentioned earlier are partially imbedded in the settings controlled by the collective other. As Geertz (1973) emphasizes, the meanings of these elements can only be partially apprehended by those who do not participate in the settings which contain them. This circumstance continually reinforces the individual's participation in community settings, so long as the contextual

> or historical bonding of the elements is not eroded. (Grannis, 1975, p. 5)

We have included these remarks not just to clarify an abstract point, but because the classroom (or other setting) as an educational community is very crucial to understanding the context of learning. The point of view of the present chapter would particularly stress the importance of incorporating "meanings" associated with students' and teachers' ethnicity, age, sex, or other bases of their collectivity, in the construction of an educational community. This implies that the congruence of the educational setting with the goal of community is interdependent with the congruence between the setting and the characteristics of its students. It is equally interdependent with the students' own perceptions of, and needs and priorities for, community as a goal. This points to the concluding problem of this chapter, the coordination of the various aspects of congruence-incongruence in a situation. It will be taken up following a discussion of the congruence of processes and outcomes of competence, which leads to the same larger question of coordination.

Settings designed to increase competence are, in Brim's (1975) terms (see Grannis, 1975, p. 16), subsettings of the classroom setting or micro-system. Combining these terms with our own, the competence settings are nested within the classroom as an educational community--however effectively or ineffectively the classroom functions to accomplish goals of community, or of micro-system maintenance and direction. (The qualification to this last statement is meant to indicate that it remains an empirical question, one indeed that derives from extensive observation of classrooms as communities, and not just a matter of educational rhetoric. (See, for example, Leacock, 1969; Smith & Geoffrey, 1968; Marshall, 1972.) It is my contention, for which there is only fragmentary evidence, that settings that are jointly controlled with respect to the various conditions and processes of activity--again options, pacing, feedback from materials, etc.--are most appropriate for the learning of concepts and skills. The argument is based both on the observation that these controls are most frequently used in classrooms for the purpose of, or in conjunction with, the teaching of concepts and skills, and analysis of the nature of concepts and skills, which shows them to involve both individual discretion and accommodation to stipulations and conventions (Piaget, 1970; Blauner, 1964; Polanyi, 1958). Joint teacher-and-learner control appears to have been integral to Montessori's (1912) pedagogy, which cannot be adequately interpreted in either "teacher-directed" or "learner-directed" terms alone. Glaser's (1977) "adaptive instruction" appears to entail joint control, in our terms, of all the elements of a teaching-learning situation.

Two forms of the larger problem of congruence now present themselves. One is the same recognized in discussing community, that congruence between the setting and its goals entails congruence between the setting and its students and between the students and the goals of instruction.

The second problem is more empirically derived. The fact is that most instructional settings, which are putatively concerned with the teaching of concepts and skills, are not in fact jointly controlled, but are controlled more by the teacher than by the learners, as in recitation, or are inconsistently controlled, as in most seat-work (Grannis, 1978). How does one explain this and what are its consequences? The explanation has to do with the larger problem of control in classrooms, which accounts for teachers' exercising extensive control, particularly if they are caught in Fuller's stage of "initial teaching" and its preoccupation with questions of the teacher's authority. The consequences are, predictably from the standpoint of the congruence model, that instruction purportedly aimed at concepts and skills frequently devolves into rote or mechanical learning. The epistemology of the instruction, then, tends to be congruent with its social and physical organization. This brings us to the fundamental distinctions between the physical, the social, and the cognitive or intellectual realms of the educational environment, and their relevance to individuals' judgment.

The Congruence Model Revised

Proshansky, Ittelson, and Rivlin (1970) drew up a set of basic assumptions about the influence of the physical environment on behavior, one that has a number of points of correspondence to the later propositions of Bronfenbrenner (1976). Among these assumptions, the following underlie much that has been written so far in this chapter:

> Assumption 6: Changes in the characteristic behavior patterns of a physical setting can be induced by changing the physical, social, or administrative structures that define that setting.
>
> Assumption 7: The environment is an active and continuing process whose participating components define and are defined by the nature of the interrelationships among them at a given moment and over time.
>
> Assumption 8: Every component of the environment interacts or has defined relationships with every other component in two ways: (a) it acts on all other aspects, and (b) it is acted upon by all other aspects and in particular, receives the consequences of its own action in terms of a changed environmental situation. (Proshansky et al., pp. 33-34)

These authors stated two further propositons that have only been pointed to in the present chapter so far:

> Assumption 9: The environment is unique at any given time and place.
>
> Assumption 10: The study of environmental process from the point of view of a particular participant in that process creates a situation dichotomized into participant, on the one hand, and all other environmental components, on the other. (Proshansky et al., p. 35)

In order to incorporate these last two assumptions into the congruence model, the term I, standing for the individual, is added to our previous schematization and presented in Figure 4. The lines between I and the three corners of the triangle represent the individual's perceptions of students, of staff and program milieu, and of goals and outcomes, or the needs-press relationships between the individual and these elements of the total situation.

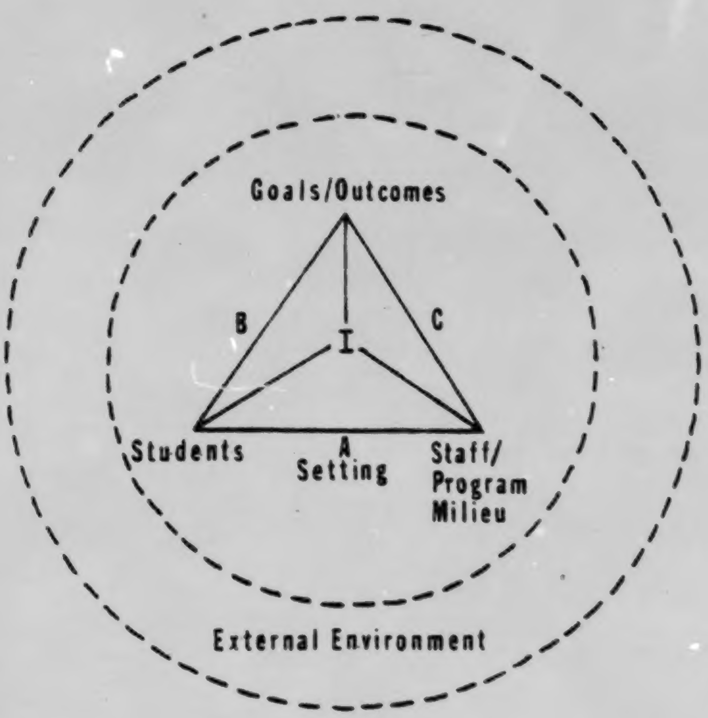

Figure 4. Revised scheme of the educational environment

Here the reader might feel one has entered Cronbach's (1975) "hall of mirrors." The possibilities for interactions seem to be infinitely compounded, especially in view of Proshansky, Ittelson, and Rivlin's assumptions 7 and 8 (above). What then is the significance of assumption 9, that the environment is unique at any given time and place; what limits does this set to control and prediction, indeed to understanding, of educational situations?

Endler and Magnusson's Interactional Psychology and Personality (1976), a book which assembled a number of theoretical statements and research reports in support of a transactional interpretation of individuals' relationships to their environments, seemed to argue most strongly for a clinical approach to the problem. The theoretical arguments first assailed trait models of personality as having been unproductive in predicting behavior, and then criticized situationism (perhaps better named "environmentalism") on a number of grounds, ranging from Bowers' assertion that, whatever its practical utility, situationism holds an impoverished conception of man, to the following claim by Mischell:

> The utter dependence of behavior on the details of the specific conditions reflects the great sublety of the discriminations that people continuously make. (From a lecture by Mischel, cited by Bowers, 1976, p. 127)

Twelve chapters of Endler and Magnusson contain reports of research in various settings. One of these is an early study by Moos, which throws an interesting light on the subsequent studies that have been noted in this chapter. This research examined VA hospital mental patients' semantic differential responses to a variety of settings experienced in the ward every day: going to bed at night, being with another patient, group therapy, and so on.

> The results clearly indicate that, in general, individuals, settings, and individuals x setting interactions account for statistically significant and important proportions of variance.
>
> For the patients, individual differences were significant for all five of the response sets, setting differences were significant for two sets, and patient x setting interactions significant for four sets. Individual differences between patients accounted for considerably more variance on all five of the response sets than did setting differences; that is, settings did not elicit consistently different reactions from patients. This implies that there is very little that one can say about how patients will feel on these response dimensions from knowledge of the particular setting alone.

> On the other hand, the interaction between patients and settings accounted for relatively large proportions of the total variance on four of the response sets. This result implies exactly what clinicians have always been emphasizing, that is, that different individuals react differentially to different settings. It also suggests that the setting is important not necessarily because it elicits the same reaction from all patients, but rather because it elicits different reactions, different reactions which cannot be accurately predicted from knowing only the general response tendencies of the patients. (Moos, 1976a, p. 372)

Now one is bound to ask, why did Moos pay so much attention to setting variations and so little to individual differences and individual x setting interactions, in his subsequent research? The simplest answer is that, by concentrating on participants' aggregate perceptions of environments, Moos focused on the consensus that results from the various interactions within the total system represented in our Figure 4, without probing very deeply into the sources of these interactions. In general, the Endler and Magnusson collection of studies would discourage this probing. In nearly all of the studies there was evidence of substantial individual x setting interaction. More than this, however, in most of the studies neither the attributes of the individuals nor those of the settings were specified in such a way that one would even hope to rise to a level of abstraction higher than unique situations. First, most of the studies failed to analyze their data for individual and trait x setting interactions simultaneously, so that one does not know how much explanatory power is gained by adding the individual to a trait x setting analysis. Most of the studies simply attempted to include "different" individuals from school or college or hospital populations, without manipulating the differences analytically. Several provocative exceptions to this are analyses in terms of high vs. low anxiety, male vs. female, and patient vs. staff subjects, all of which variables appeared to affect the distributions of variance. These findings were played down in the research reports, however. A similar failing can be observed on the environment side of the question. With the exception of one study that varied leadership situations systematically, the studies simply took care to include "different" situations. The logic of these studies, then, forces one to examine each individual-setting relationship on its own terms, rather than delineating a step-down of degrees of explanation in the manner that Stern's research, especially, has pointed to.

Figure 4 is meant to suggest how the general problem is amenable to research. Sides B and C represent what are typically construed as main effects, and side A attribute x treatment interactions, in that educational and related research in which goals themselves are not treated as variables.

One major class of these interactions is encompassed by the susceptibility hypothesis, viz., those in which it is possible to describe individuals who tend to be more susceptible than others to side C effects, often unintended, debilitating effects rather than intended outcomes. Indeed, the susceptibility hypothesis implies that, more generally, individual students (or patients or clients) will vary in the extent to which they can distance themselves from the situation A-B-C, to make their own distinctive adaptation--as when a student who would prefer a more independent instructional style adapts in some degree to the requirements of a more dependent style. What is at issue is not simply divergence of perception. It is claimed that healthy individuals agree more than unhealthy individuals on their perception of reality (Moos, 1974a). Stern's example of a student with discrepant perceptions of the general student body is a case in point. Perhaps the claim extends to other aspects of competence broadly defined, most obviously intelligence. Figure 4 calls for identifying the "objective" (i.e., consensual from the standpoint of participants and/or a research community) relationships that might obtain between A, B, and C, and then examining individuals' perceptions of, and adaptations to, the situation. Again, Stern's research comes closest to this, while the general paradigm is consistent with both Murray's and Lewin's theory.

For the clinician, working now in a framework of generalizations rather than just an ad hoc approach to the situation, this means piecing together a construction that represents the best fit between an individual subject's perceptions and the objective situaton. Of course, this is what clinicians strive to do, at least those whose epistemology is not so totally phenomenological as to bar this approach. An analogy can be made to recent research on the cultures of schools and classrooms, which is moving toward an integration of the highly general structural-functional approach with the highly particularistic approach of some ethnomethodology, to understand school and classroom cultures as particular constructions of meaning within the framework of societal constraints and trends (Apple, 1978).

As demanding as this may be upon the clinician, it is an assumption of Figure 4 that each and every individual, the I of the figure, himself or herself construes the meaning of a situation. This is the significance of Proshansky, Ittelson, and Rivlin's assumption 10. What is added to this by interpreting the figure in congruence terms is the assumption that congruence theory is applicable to the interpretation of the individual's perceptions of and adaptations to the situation. In other words, we can now add to Barker's information processing feedback model, which is a way of accounting for the general congruences along the three sides of Figure 4, the more individually oriented theories of cognitive consistency. Festinger's (1959) theory of cognitive dissonance, Heider's (1958) balance theory, Osgood and Tannenbaum's (1955) congruity principle, and a variety of derivative theories (Abelson, Aronson, McGuire, Newcomb, Rosenberg, & Tannenbaum, 1968), all have in common

> the notion that the person behaves in a way that maximizes the internal consistency of his cognitive system; and by extension, that groups behave in ways that maximize the internal consistency of their interpersonal relations. (Newcomb, 1968, p. xv)

In research so far, these theories have not so much been proven or disproven as their heuristic value for defining questions has been demonstrated. As was stated at the outset of this discussion, I can only say the same for the value of the congruence model more generally. My research has led to the finding that internal consistency of the controls of a pedogogical setting is associated with higher task engagement than is inconsistency of the controls (Grannis, 1978). I have not investigated empirically my hypothesis that the controls of learning conditions or processes and outcomes will tend toward consistency. All of the foregoing argument, however, is implied in the following statement:

> The full-fledged consistency hypothesis holds that, at different levels of individuals' and groups' development, the presence of a given constellation of environmental controls signals the general form of what is to be accomplished in an activity, as well as promoting its accomplishment through the regulation of control over press [pacing], feedback, evaluation of the end result of the activity, and other instrumental processes. A dynamic interplay or equilibration between the perception of the goal of an activity and the control of the conditions of the activity is thus a part of what is implied by the hypothesis that controls of process and controls of outcome tend toward congruence. A congruence of process and outcome in an educational setting results when the participant consistently takes his criteria for thought and action from self, other, or self and other jointly. (Grannis, 1978, p. 31)

As this might appear to be a sanguine statement, rationalizing situations to the extent that they manifest congruence, it is necessary to repeat the observation that the congruence one finds in an educational situation can well run counter to an intended educational outcome, representing a change or accommodation of the goal to be more consistent with instructional conditions that are inappropriately matched with either the students or the original goal.

Implications for Instruction and Further Research

What has been presented here is, above all, a way of thinking about the interactions in an educational situation. As was said before about the complexity of the environment, the "hall of mirrors" need not be just a baffle to instruction and research, but it aptly represents the phenomenon that must be entered and explored, as individuals do themselves in their everyday life. The first and most substantial implication is that teachers and researchers might study specific situations in the light of the congruence model. To accomplish this, they will need to attend to both participants' and external observers' perceptions and measures of the students, the staff and program milieu, and the goals of the situations under scrutiny. The investigation must attend to the general relationships among these several elements, and to individual participants' constructions of these relationships. Central to this approach is the assumption that equilibration processes, both internal to individuals and external to the various feedback mechanisms of the classroom as a micro-system, are continually at work. These need to be identified and exploited or enhanced, in order to facilitate educationally positive adaptations and to introduce new information into the system where it will contribute to realizing educational goals.

Both the symbolic and the pragmatic or instrumental functions of environmental features need to be illuminated. On the symbolic side, one asks what is the significance of the physical design of the setting, its material props and barriers and points of contact and access, the affective tone of its colors, shapes, and textures. One asks also what is the message of the way students are spaced and grouped in the classroom, of the teacher and student written communications displayed in the classroom, of the interaction patterns between teacher and students and among students, and of the distribution of controls generally in the classroom and specifically in one or another activity setting. Of all these environmental features, one asks again how they function pragmatically, to facilitate or inhibit one or another activity. One must attend particularly to the initiations, interruptions, and terminations of activity, for clues to features of the environment that affect the activity. The standing patterns of behavior, individuals' deviations from these patterns, and the mechanisms that correct or allow these deviations, must be described with equal attention to the students, the staff and program milieu, and the goals of the classroom and its settings.

Given the potential variety of environmental features, it would be wise to begin in a given classroom with an environmental feature that is both salient in the classroom and already established in research to date to interact with student attributes in partially known ways. "Salience," indeed, is often produced by strong congruity or incongruity of a feature with others. Following the outline of this chapter, one might start with features that are known to overdetermine the behavior of some individuals contrasted with others, spatial distance, overmanning, noncontingent reinforcement, crowding, restriction of activity in time, and possibly others, to find out if indeed some students in the classroom are particularly susceptible to the known effects of these features, and what provisions are, or might be, made to mitigate these effects. The research might then turn to one or another feature for which there is a stronger presumption of disordinal interactions with student attributes, if not under the conditions found in the classroom as given, then in a modification of the classroom that _specifically_ articulates different instructional conditions with different student characteristics. The concept of a negotiable range of congruence, rather than an exact fit, seems to be crucial here. The teacher's press for conformity or independence, a more competitive or more collective interaction mode, and written or visual vs. aural vs. tactile exchange of information, are among the instructional variables that might most fruitfully be manipulated in relation to students' needs and preferences. Finally, if interactions of both the susceptibility and preferential aptitude types had been discovered and reflected in modifications with respect to a given educational goal, the further interactions of the student and instructional variables with different educational goals, for example academic achievement vs. creative expression, could be examined.

These multiple interactions might defy statistical analysis for a long time to come, and presumably would never reach statistical significance within a single classroom. Once again, however, it must be asserted that individuals have capacities and tendencies to select and adapt that are frustrated under the relatively inflexible conditions of most classrooms and laboratories. It is significant that students' self-reports, along with teachers' judgments, are the basis for the distinction between conforming and independent learning style that has figured in some of the strongest examples of aptitude-treatment interactions that have been established to date. This underscores the importance of attending to students' and teachers' perceptions of the educational environment at all phases of its investigation. The congruence that one finds in educationally effective and ineffective classrooms alike reflects the judgments of their participants. It is these _already_ standing patterns of behavior and milieu that an ecological approach to the problem of interactions takes as its point of departure.

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CHAPTER 14

Human Diversity: Implications for Schools

Robert C. Calfee

A Prefatory Note

The single most important dimension of psychological, social, and educational diversity among human beings is probably marked by the distribution of wealth, and the power that wealth represents.

This statement may seem a startling, inappropriate, and perhaps indefensible starting point for this chapter--most readers of the initial draft of the paper had strongly negative responses. Nonetheless, I have decided to begin on this note, minor and discordant though it may seem. As to the empirical support for the proposition, I will not attempt a thorough review. Numerous studies have shown the correlation between socioeconomic status and educational attainment. The variability in funds allocated to schools in a community is generally linked with the economic well-being of that community, and while money does not guarantee quality education, it helps. And the amount of education a person receives is correlated with later job status and with job earnings (U.S. Department of Labor, 1978).

I am by no means the first to emphasize the importance of economic diversity for students and schools. Bronfenbrenner (1974), in the coda to his summary evaluation of Head Start, suggests that the compensatory efforts represented by that program were not without value; they were simply not adequate to counterbalance the influence of the poverty in which the target populations were born, grew up, and went to school. For Bronfenbrenner, the economic dimension provided the finale. I chose it as an opening theme. Money and the resources represented by wealth are at one and the same time an index (and probably a cause) of differences between students and between schools, and a lever by which these differences can be amplified or diminished. This is not an empirical statement but a hunch, the same hunch that underlies the continued allocation of federal, state, and foundation funds to aid in the education of the economically disadvantaged students of the nation. To the extent that this conjecture is true, it forms the broad context within which diversity and equity must be discussed.

For many American children, the public school is the first and perhaps the most significant excursion into social diversity. The individual child is changed by the diversity he encounters; to the extent that he is different, he also contributes to that diversity.

Is diversity in schooling good or bad? As Harrington notes in Chapter 6, "There is adaptive value in diversity; the greater the diversity, the greater the potential adaptability" (p. 6.6). Harrington also points out the range of possibilities for the school. At one extreme is the position attributed to E. P. Cubberley in 1909, and to S. J. Hayakawa in 1978: the public school is the mechanism for reducing the variety of cultures in our country to a melting-pot uniformity. Put as bluntly as this, the goal is offensive to some citizens. At another extreme is the complete tolerance of all modes of cultural expression. In the limit, the school might not be held accountable for teaching literacy in English or respect for the American ideals of democracy and individual freedom.

It is relatively easier to seek equal educational opportunity when goals are held in common. It is more difficult when there is a diversity of goals. The conflict between the melting pot and cultural pluralism produces a taut and often uncomfortable tension. Harrington is perhaps unaware of the dilemma posed by his challenge that "today's educators are encouraged to respect cultural differences, and to get on with the job of teaching the basics" (p. 6.4).

This conflict is part of the continuing and fundamental problem at all levels of the American system: how shall we define schooling? On the one hand is the mandate of socialization and conformity, of preserving the traditions. On the other hand is the role of the school as an agent of change and social reform. The conflict is probably a worldwide phenomenon, though we will comment only on the American situation. On the one hand, schools are a conservative force, tending to preserve traditions--in Kanawha County, West Virginia, Catcher in the Rye is taken off the library shelves. On the other hand (and in the same school system!), busing is implemented for the purpose of racial integration. In his chapter Harrington concludes that "the thrust of education is clearly seen as culturally conservative . . . education is primarily an agent of cultural conformity" (p. 6.17). It is not clear how to verify such a statement, but certainly not all citizens in our country would agree. Harrington continues his argument with the statement that "schools follow or reflect a culture rather than lead it. . . . Social reformers who use schools as a vehicle for changing the larger society are likely to fail in their more ambitious goal . . . although they may well appear to have changed schools" (p. 6.18). We agree with Sarason (1971) that the change in schools may often be more apparent than real. Nonetheless, we think that schools can change, can become better places for students and teachers, and can even serve as a means for supporting societal change (McLaughlin & March, 1978).

Schools and money. Schools vary in the character of the programs they offer, in the experience and optimism of the teaching staff, and in the resources at their disposal. Historically, the financial support for schooling in the United States has come from local property taxes. This base of support ensures that diversity in community wealth and support for education is correlated with the resources provided to the schools. Recent court decisions have ruled that such variations in the financial support for schools are illegal (not the correlation, but the variance, is inequitable), and communities must now seek alternative methods for financing schools. This development, it should be noted, runs counter to the federal efforts to match special needs with supplemental funding--the exact nature of our concept of national equity continues to elude us!

Suppose educators had all the money they wanted for schooling. What would they do with it? What goals would they pursue? How would they tell the degree of success of their efforts? Would schools become more or less alike? Would students be more or less different at graduation? The educational community has been given a great deal of money for more than a decade, and answers to the preceding questions sound cacophonous to many ears. While we are mindful of the importance of the economic context, it is clear that a great deal of thoughtful reflection remains to be carried out in order to examine and refine our concepts of diversity in students and in educational programs, and to clarify our objectives with regard to managing and altering the existing patterns of diversity. This is the challenge posed to the authors of this series, and to the writer of this chapter, and it is sufficient in its own right.

Things may be changing. Before I leave the topic of economic variation, a final and somewhat more optimistic remark. Economic diversity is by no means the only source of difference in the United States, nor is this state of affairs universally accepted and valued by our society. As Gordon (1977a) has noted:

> The history of modern societies has been marked by recurrent efforts at broadening the populations to which special privilege is assigned, or better, at reducing the populations who are deprived of opportunities that others are afforded. This trend in the development of human societies is probably best marked by the recurrent efforts at the redistribution of wealth; the movement has been slow but consistent in the direction of broadening the group of persons who either own wealth or at least share in the benefits of wealth through income. (p. 3)

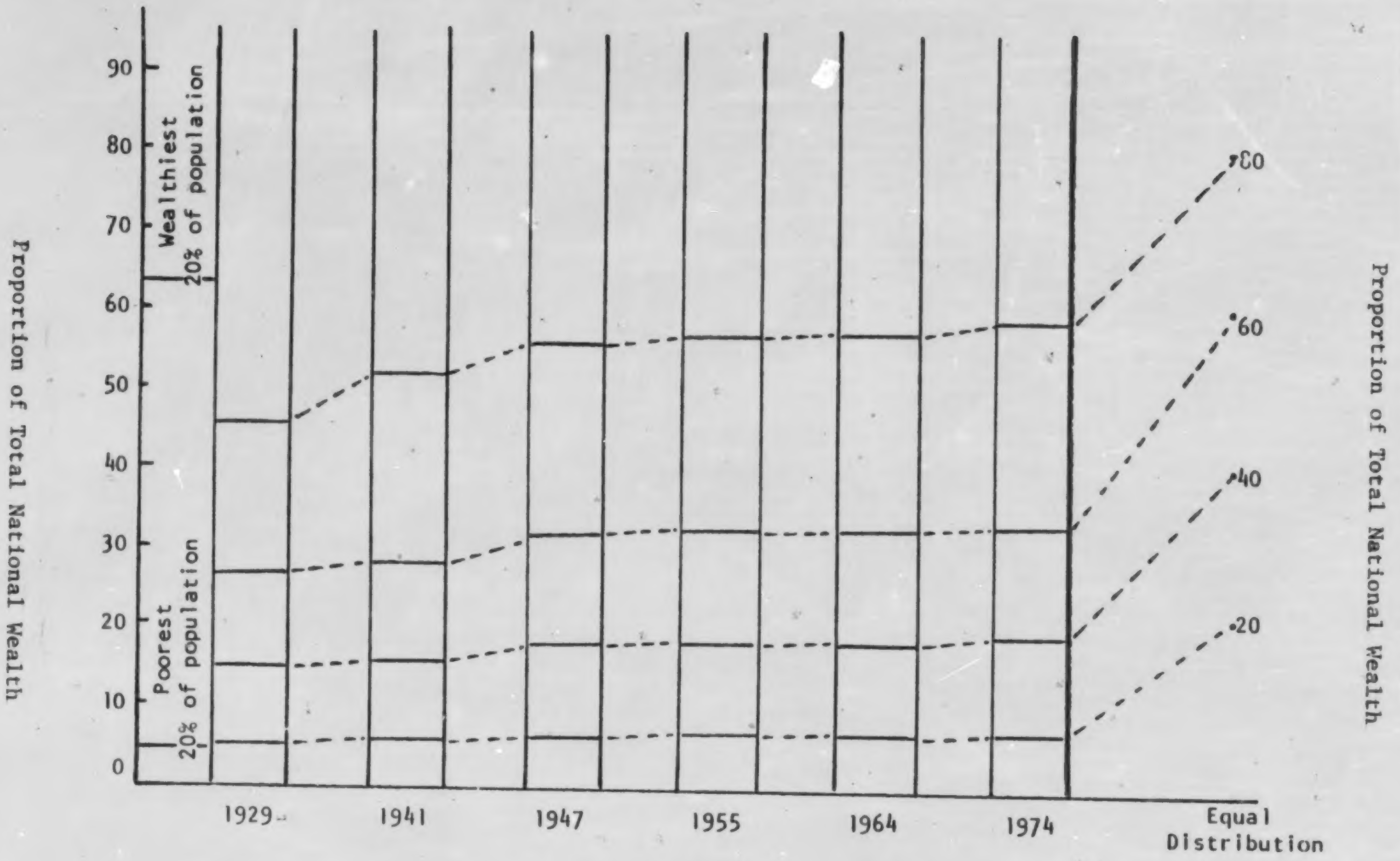
Some idea of the extent of redistribution during the last two centuries of United States history is seen in the statistics reported by the New York Times Magazine on the occasion of the American Bicentennial (Figure 1).

Public education in the United States has also been a significant factor in influencing human diversity. In the minds of the founding fathers, public education was essential to the establishment and maintenance of a democratic state, though the meaning of public education, the clients, and the extent of implementation have changed dramatically over two centuries. This ideal remains a tenet of American democracy to the present. Today's concept includes a broader range of citizens, and the interpretation of the ideal continues to change in significant ways as the society changes.

Purpose. This chapter looks at the role of American schools in relation to human diversity--schools as they are, with the resources they have available, the people who are there now, and the programs and practices that tradition has evolved. Radical departures from these present realities can be imagined, but evolutionary change seems the American way, and so we prefer a careful reflection about where we are now, and where we seem to be moving. The larger questions of social injustice, inequality in the distribution of wealth and well-being, the fact that misfortune and incompetence befall some people more heavily than others--all these concerns stand as present and distressing realities. We do not intend to minimize the significance of these factors, but we will focus on variations in school programs, and the suitability of these programs to student diversity.

We propose in the chapter a theoretical framework for encompassing what we know about the psychological, sociological, and environmental aspects of human diversity. The framework is potentially overwhelming, but we will limit ourselves to those differences that are related most directly to schooling. It is developmental across the lifespan, but we will consider primarily the ages from preschool to high school. It builds upon the papers prepared for the Human Diversity project, but no attempt is made at a comprehensive, critical review of those papers. It brings us to the point of recommendations for practice and policy, but we will also stress directions for research that may inform us more completely.

Overview. The chapter, after this introduction, has six sections. In Section I we present a theoretical model for developmental changes in the contexts and character of human diversity. This model is heuristic rather than formal. Nevertheless, we think it serves as a useful organizing framework. The primary theme of the model is the change over time in the character of individual differences, and in the sources of contextual diversity that surround the individual. Each infant is distinctive from every other (Tyler, 1978, pp. 55-72), but the context in which the infant



14.5

Figure 1. Changing distribution of wealth in United States over past 50 years (Okum, 1976)

grows tends to be homogeneous and consistent--the same few people, the same physical environment, the same expectations and responses. As the child reaches school, he or she encounters a broader array of people, of environments, that have different expectations of the child. With entry into secondary school, peers and self-direction become greater influences, and the adolescent begins to gain increasing control over the sources of diversity that comprise his surroundings. This trend continues in adulthood, when the person finally achieves as much choice as life allows, given the context in which he or she lives.

The model also provides a perspective on the more typical dimensions of diversity: individual differences, environmental differences, and the interaction between the two. It allows us to compare and contrast the individual, the home and the community, and the school. It is this perspective that serves to organize the next sections of the chapter.

In Sections II, III, and IV we will look in turn at the home and the community, the school, and the individual as sources of diversity. The focus in all these sections is schooling and school learning.

The last two sections present an analysis of two general types. In Section V we consider implications of our analysis for practice, policy, and research with regard to staff development and teacher training, the design of curriculum, the matching of students, teachers, and programs, and the management of instruction. In Section VI we focus on the significant role of various decision makers in the reconciliation of diversity and educational equity.

Section I. Developmental Change in the Contexts of Human Diversity

People are different from one another. They differ in their genetic heritage, in their environmental endowment, and in their expression of the joint contribution of these two facets. A considerable effort has been devoted to the research and analysis of these differences, and if we lack full understanding, at least we are richly aware of our ignorance (e.g., Tyler, 1978; Willerman, 1979). We have several taxonomies of human differences, and know a great deal about the strengths and limitations of each. In particular, we have considerable knowledge about certain aspects of differences in educational achievement, and in the development of achievement over time (e.g., Bloom, 1964).

Environments also vary. They differ from individual to individual, from one situation to another, and from one time to the next. Our task in this chapter centers upon an examination of the interrelationship of students and schools, and so it is essential to deal with the environmental diversity in schools and instructional programs. This need leads inalterably to an attempt at a broad conceptualization of environmental diversity in relation to individual differences.

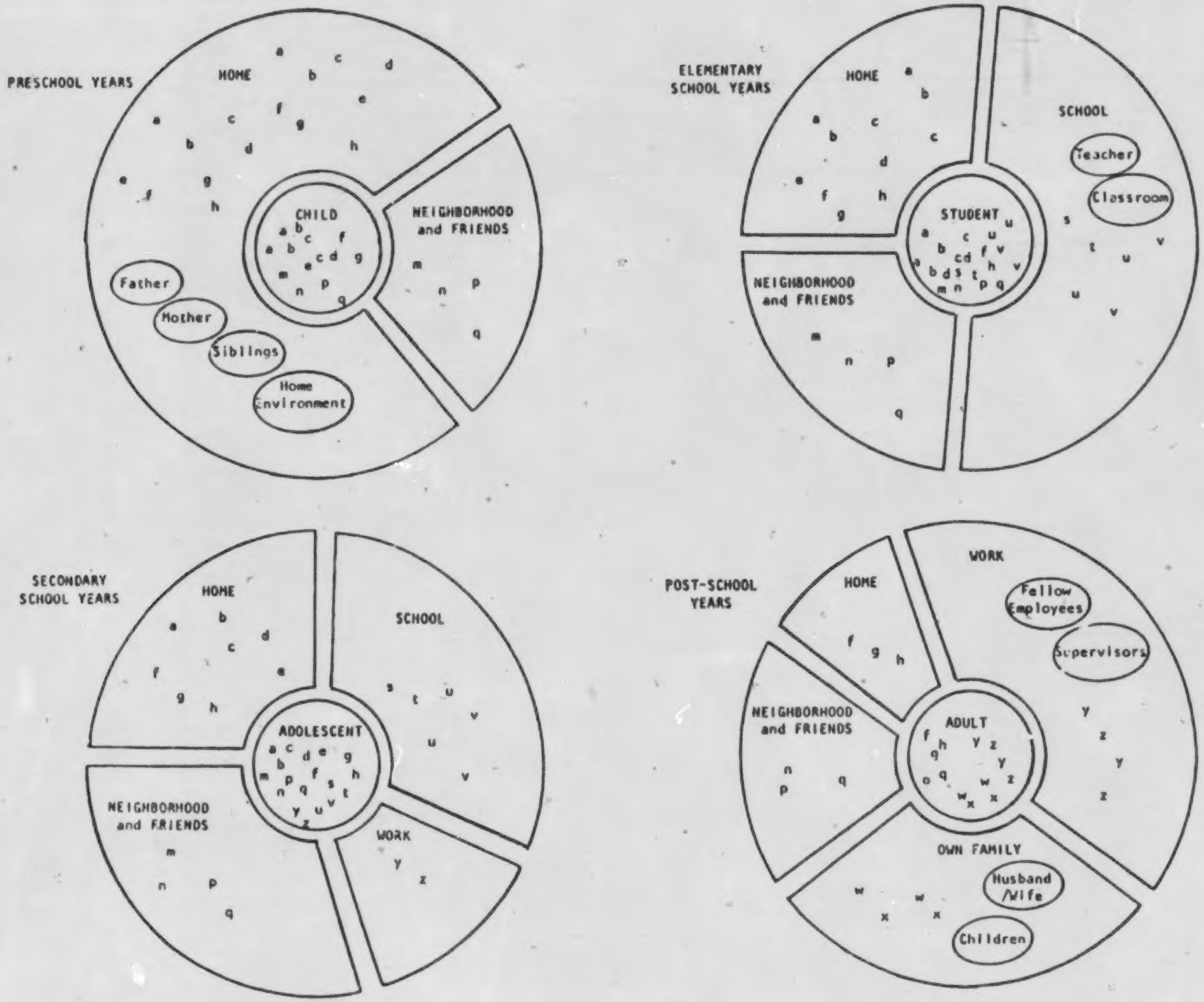
It would be presumptuous to pretend that we have achieved an adequate treatment of this topic. However, nowhere else in the papers is the matter addressed (a possible exception is the Whiting model mentioned by Harrington in Chapter 6). Accordingly, we will report our efforts to conceptualize the problem. We must represent a multidimensional problem on two-dimensional paper, so we beg the readers' patience. Note also that the model is intended as a heuristic, a framework for discussion. It is not a formal theory.

Progression over time. In Figure 2 we portray the development of a person from preschool through adulthood, together with the changes in the surrounding contexts. In the center of each diagram is the individual. The various symbols reflect the facets that mark the individual as distinctive from his peers and show the sources of these distinctions. The progression in this figure is that of a middle-class child in an American suburb. The pattern is probably different for persons growing up in other settings, as we will point out below.

The picture in Figure 2 begins with the child who is relatively uncomplicated, who internalizes primarily the heritage and environment of the home. As the child becomes a student, school and friends take on increasing influence. The adolescent turns to peers as a guide. By the time he becomes an adult, many personal characteristics are determined, by the work he chooses, the family he establishes, and the friends he cultivates. The person who emerges from the adolescent cocoon may be quite different from the child who entered as a chrysalis.

The surround in each diagram represents the nature and magnitude of contextual influences at each age. Again, we have in mind the "typical" American. In childhood, the family virtually "surrounds" the young person, and its influence dominates and amplifies the child's natural proclivities. With the onset of elementary school, a major change occurs. The child, now suddenly a student, is exposed to novelty--to new adults, new peers, new environments, new tasks, and new roles. The transition is abrupt; children cry a lot during the first few days of kindergarten! More generally, change, transition, and diversity mark the experience of schooling. Most obvious is the year-to-year transition in the teacher, the classroom, the curriculum, and the expectations. The child must make the leap from one year to the next on his own--school, teacher, or parents seldom bridge the gap.

The secondary school initiates the escape to adulthood and freedom. The adolescent looks to fellows, usually of his own choosing, for support and comfort, and as models. These friends are generally chosen for


PRESCHOOL YEARS
HOME
CHILD
NEIGHBORHOOD and FRIENDS
Father
Mother
Siblings
Home Environment
ELEMENTARY SCHOOL YEARS
HOME
STUDENT
SCHOOL
Teacher
Classroom
NEIGHBORHOOD and FRIENDS
SECONDARY SCHOOL YEARS
HOME
ADOLESCENT
SCHOOL
WORK
NEIGHBORHOOD and FRIENDS
POST-SCHOOL YEARS
HOME
ADULT
WORK
Fellow Employees
Supervisors
NEIGHBORHOOD and FRIENDS
OWN FAMILY
Husband /Wife
Children

14.8

Figure 2. A model for developmental change in the contexts of human diversity for the person

similarity rather than contrast. The trend is toward peer conformity, and on the surface there may be little diversity in teenage groups. The character of the school also changes--now the student must deal at one time with several teachers, several classroom environments, and several curricula. Moreover, secondary schools are often quite large in the United States, and so the actual range of student diversity is considerably greater than in grade school. The adolescent also begins to enter the workplace, where he encounters people and situations quite different from those of his or her previous experiences.

Though secondary school increases the diversity of experience available to individuals, it also allows them greater choice, and this trend continues into adulthood. In principle, the individual is free to do what he wants with whom he chooses. Workplace and companions are matters of choice. The decision is often to reduce diversity to find a mate much like one's self, to live in a neighborhood consistent with one's own status and values, and to find a niche in the world of work where he or she feels relatively comfortable. The adult turns back toward the stable and restricted environment of the preschooler!

Variation among individuals. Let us now turn our attention from the variation over time in a single person's context to a consideration of individual differences in contexts. The "slices of life" in Figure 2 were drawn to represent what we imagine to be the circumstances for a typical American middle-class person. Around this modal situation there is great variability, which is likely to be a determinant of variability between individuals. Individuals have differential opportunities to experience and incorporate diversity in their social and psychological functioning as persons, and in their knowledge and acceptance of diversity in others. We will not attempt a detailed examination of this idea, but will exemplify the point by looking more closely at the preschool years in Figure 2.

In Figure 3 we have illustrated the variability that may be associated with two contextual dimensions that are significant factors for the preschool child. In the top panel are represented the probable effects of the community setting. At the one end of the continuum, in rural settings the relative importance of the home and family is greater, thereby decreasing the overall diversity impinging on the developing child. In urban settings, on the other hand, the people and situations in the neighborhood are likely to vary considerably and to have a great impact on the child (e.g., Gordon, 1977b).

In the bottom panel, we show the possible effects of family situations on the environmental context for the child. The range of possibilities extends from the "intact" family with the mother in the home exerting high control over the external influences, to the working single-parent

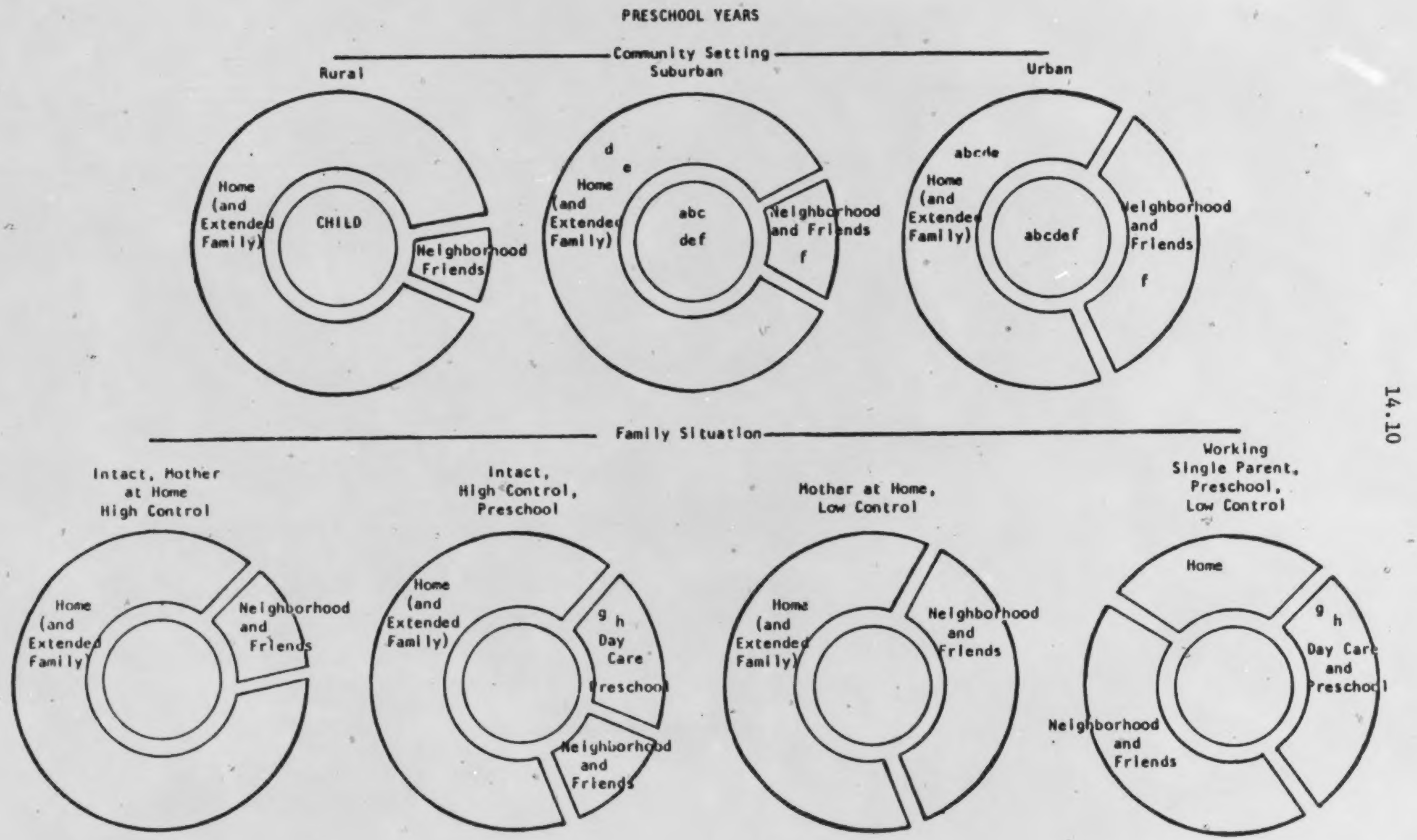

PRESCHOOL YEARS
Community Setting
Rural
Suburban
Urban
Home (and Extended Family)
CHILD
Neighborhood Friends
d
e
Home (and Extended Family)
abc
def
Neighborhood and Friends
f
abcde
Home (and Extended Family)
abcdef
Neighborhood and Friends
f
Family Situation
Intact, Mother at Home High Control
Intact, High Control, Preschool
Mother at Home, Low Control
Working Single Parent, Preschool, Low Control
Home (and Extended Family)
Neighborhood and Friends
Home (and Extended Family)
g
h
Day Care
Preschool
Neighborhood and Friends
Home (and Extended Family)
Neighborhood and Friends
Home
g
h
Day Care and Preschool
Neighborhood and Friends

Figure 3. Hypothetical effects of community setting and family situation on contextual diversity for the preschool child

home where the child is in day care or preschool, or perhaps roams throughout the neighborhood. If our conjectures are correct, there are likely to be substantial variations in the character and extent of diversity experienced by children at any developmental level.

Person-environment interactions. We have commented on the variations between individuals, the variations between situations, and the variations over time. We should also talk about the interaction between the person and the environment. An important individual difference between students is the extent to which they are influenced by the external world, the degree to which they internalize diversity as a real and valuable property of people and situations, and the manner in which they reflect greater diversity in their performance and attitude when they experience variation in the environment. For instance, people differ in their response to models, and to the kinds of models to which they respond (Bandura, 1977). As another example, field-dependent individuals look to the environment for guidance, and are more likely to mimic their surroundings, compared with field-independent individuals (Shipman & Shipman, Chapter 12). To be sure, we seldom know about the experiences that underlie the development of this style. Harrington (Chapter 6) describes research by Ramírez and Castañeda (1974) on field dependency among Mexican American children, and the tendency for the home background to emphasize cooperation and respect for authority, contrary to the school environment which encourages competition and independence. Harrington also points out a weakness in this research program (a flaw all too typical of the work on ethnic factors), the "false homogeneity" of the Mexican American culture. Neither Spanish-surnamed students nor their complement, the "mainstream," are sufficiently like one another to permit such sweeping generalizations about competitiveness or independence (in the typical American classroom?) as characteristics of the group.

Section II. Diversity in Home and Community

Socialization of life in modern society is a function shared by home and school. Occasionally these two sources coordinate and complement; often they are independent or even conflict (e.g., Hess & Holloway, 1979; Lightfoot, Note 1). That is, sometimes one finds the parents informed about the school, the school open to involvement with the family, the environment of the school and the practices of the teacher designed to mesh with the child's experiences in the family and neighborhood, and the mother and father supportive of the particular goals of the student's classroom. One finds such situations on occasion, but apparently not as a commonplace.

The most serious effort to link home and school is the kindergarten. The training for kindergarten teachers emphasizes the importance of communication with the parents (at least with the mother) at the beginning of the school year, and it is not uncommon for this contact to be maintained throughout the school year. There is considerable variation between homes in the extent to which the child is psychologically, intellectually, and socially prepared for school. One task of the kindergarten teacher is to reduce this diversity. Over the course of the kindergarten year, the variety of styles that distinguish the children at the beginning of the year is reduced to a more orderly array. Partly, children are taught what they should do and what they may not do. Partly, they are sorted into groups and given labels (implicitly or explicitly) to identify their readiness for instruction, their educability, and the extent to which they are outliers on one or another dimension (too boisterous, too inattentive, too talkative, too quiet).

Another approach to reducing the variations between children at the point of transition from home to school is direct intervention in the home. Sesame Street represents such an effort, and the evidence suggests that this television series is successful in bringing the curriculum of the school into the home, at least for middle- and upper-middle-class children (Ball & Bogatz, 1970). Another such effort that has demonstrated some success with lower-class children is the Home Visitor program of the Appalachia Educational Laboratory (Bertram, 1971). These programs and others like them prepare children cognitively and to a lesser extent socially for the environment of school. In effect, the programs reduce the range of variation that the kindergarten or first-grade teacher must deal with, as well as enhance the child's chances of achieving success in school.

Status and functional descriptions. But we have strayed from our primary question--What are the facets of home and community that underlie the differences between children that we see in the early school years? Our basic classification scheme focuses on the operational elements of the environment: the mother, the father, the relation between the two (if both are present); siblings; the home environment, both physical (including television) and social; the neighborhood environment, the neighbors, the peers; the extended family. This list is perhaps not complete, but it suggests the range of significant influences.

For each of these elements we can describe the situation for the child in two ways--we will refer to these as status and functional descriptions, following Gordon and Shipman (see Introduction of this volume). A status feature is nominal. It is usually an objective label for the person or group or thing. A functional feature is operational; it attempts to account for the mechanisms by which a characteristic comes to be, has an influence, and operates in a situation.

Thus we might list as status features of the parents their number and makeup (number of people, one or two parents), their social class (income, education of parents, occupation of breadwinner), and their ethnicity ("Spanish surname," "black," "other white"). Status features of the home environment might include the size (number of rooms), special features (bathrooms, swimming pool), and living arrangements (number of people per room or bedroom). This kind of information can be obtained by a census. It gives us some idea of the variation between students in a neighborhood or community. Status descriptions often permit prediction, both of central tendency and of variability.

It is by no means clear, despite their predictive power, that status features are trustworthy guides to action. These indices may be the only available sources of information, and the tendency to stereotype may lead one to respond primarily to status. Harrington (Chapter 6) gives a painful example of advice based on status characteristics: The teacher is advised to have a book available if she has an appointment with a Hispanic parent. That way she will be able to respect the parent's culture, because she won't be disappointed by the ensuing wait.

In principle, the school would seem better advised to rely on the functional aspects of the home and family. These might include the nature of the language used in the home, between parents, and between parent(s) and child. One might consider the social interactions among the family members as these appear in a parent conference: Who takes charge in various situations? How does the child seek to get what he or she wants, and how consistently do various ploys pay off? What are the values of the home, and how are these expressed? What is the perception of learning? Of schooling? Of the family's responsibility to prepare the child for school, and to support the school's mandates? Will homework assignments be enforced?

Information about these matters is not always easy to come by. Indeed, some may feel that such matters are "none of the school's business"--and perhaps they aren't. However, it seems likely that the functional characteristics of the family and the neighborhood are vital determinants of differences between children, and that they underlie the child's acceptance of and susceptibility to differences in others.

The match between the functional features of the school and those of the home also affects the school's success in educating the young. The local school must continually find a balance between the goals of the local community and of the larger society. Neither of these is especially consistent, to be sure, as one can learn by studying legislative mandates, reading tracts on educational philosophy, or attending local school board meetings. The major conflicts seem to occur when the community loses any sense of "ownership" in the school--when the people, practices, and conventions of the classroom are estranged from the home. This estrangement is likely to be felt when the parent is chiefly worried about putting food on the table and protecting the house against fire and vandalism, while the school is concerned about dress code and foul-mouthed language and proper manners; when the teacher seeks to instill an appreciation of Shakespeare or Dumas, while the family is occupied with welfare regulations or the preservation of fundamentalistic religious practices; when the family knows only Spanish or Tagalog or Vietnamese, while the teacher, principal, and secretary speak only in English.

In these situations and numerous others that could be mentioned, when the home and the school are unable to support each other, the parents find little comfort from the principal or teacher, and vice versa. The child is caught in the middle, with little chance of managing a reconciliation. We aim neither to legitimize these mismatches, nor to condemn them. That is not the point. The problems of the child whose family are illegal immigrants from Mexico are genuine for the child and for the teacher, quite apart from American traditions and laws about immigration. The fact that most Americans (and hence most teachers) are monolingual in English is a present reality, quite apart from whether this situation is intellectually, professionally, or ethically defensible. The point is that these mismatches of family and school are part of the existing patterns of diversity, and must be considered in any analysis of the instructional response to diversity. In any event, whatever the match between home and school, let us reemphasize that the understanding of how home and school complement each other will require investigation of the functional school-related aspects of the home; status characteristics per se will not suffice. A promising example of just this approach is Grannis' description in Chapter 13 of Wolf's (1966) research on home-environment variables affecting school learning:

> The variables measured by Wolf included the opportunities for verbal development, the nature and amount of assistance provided in overcoming academic difficulties, the kinds of work habits expected of the individual, and so forth. Wolf obtained correlations between the total rating of the home's intellectual environment and subjects' intelligence and achievement that were considerably higher than those typically found between social status and intelligence or achievement. (p. 13.19)

A similar line of work has been pursued by Hess and his colleagues with younger children (Dickson, Hess, Miyake, & Azuma, 1979; Hess & Holloway, 1979; Hess, Shipman, Brophy, & Bear, 1969; also cf. Miller, 1969; 1970).

Section III. Diversity in the School

Again our plan will be to consider the distinctive components in the school, and then call attention to certain status and functional features of each component. We see five separable elements in the school: the teacher, the instructional program, the physical classroom environment, the social classroom environment (including the student's classmates), and the school itself. We realize that these elements are not altogether independent, nor are they entirely separable. Nonetheless, they are sufficiently distinctive for it to make sense to attempt to consider them one at a time.

The teacher. The classroom teacher is probably the dominant factor that makes one classroom different from another. Competency-based training and behavioral objectives to the contrary notwithstanding, the teacher's knowledge, ability, interests, and style determine much of what happens in the classroom (Calfee & Shefelbine, in press; Hunt, Chapter 1).

The research on teacher effectiveness has generally taken cognizance of status features: age, experience, sex, ethnicity, verbal ability, and cognitive style have all been implicated in the teacher's competence at one time or another. General measures of attentiveness, reasoning, personality, and motivation have also been mentioned. It is sometimes hard to say whether a characteristic is properly placed in the status column, but we tend to use the category for any feature that is primarily designative rather than operational (e.g., "In the ideal class . . . the teacher emphasizes the belief that the purpose of school is learning," Commission for Teacher Preparation and Licensing (CTPL, 1978).

The functional differences between teachers are measured in part by observing performance in the classroom. How do they organize the students for instruction? How is time divided between lecture, discussion, and seat work? Who makes decisions about the timing and selection of tasks? This list could be extended (Calfee & Shefelbine, in press), but the evidence suggests considerable variations in practice. We suspect that teachers also differ greatly in their educational goals, in the way they plan for instruction, and in the problem-solving strategies they bring to bear on instructional situations. Less evidence is available on these matters, which require the investigator to talk with the teacher, as well as to observe the performance.

There is no question that status features point to important differences among teachers, and that they are predictive of certain outcomes of teaching. However, the purposes of evaluation, improvement, and understanding are probably better served by functional features. Teachers' thoughts and attitudes are critical for an understanding of diversity in actions.

The curriculum. Let us turn now briefly to the instructional program, the curriculum. Certain features of curriculum variation strike us as status-like--content areas and the mandated emphases on each (reading, mathematics, vocational education, multicultural education, and so on); program labels (for instance, within reading, phonics programs, whole-word programs, and language experience programs; within bilingual education, maintenance programs and transitional programs; and so on); and the style of curriculum implementation (the structured school versus the open classroom, for instance).

The functional aspects of the curriculum require a more detailed examination of the instructional materials--of content, sequence, choices, instruments for assessing progress, and so on. One must observe the actual implementation of the program of study, apart from what has been intended by designer, or educational expert, or bureaucrat. If the available research tells us anything, it is that curriculum labels account for relatively few systematic effects (the point has perhaps been overstated by Jencks and his colleagues (1972), who appear to conclude that schools per se do not have effects). The important variables describe how the curriculum is actually put into action. Here there is reason to be optimistic that what is taught and how it is taught matter a great deal (Gage, 1978, 1979; Good, Biddle, & Brophy, 1975; McDonald & Elias, 1976).

We cannot undertake a full-scale review here, but it is worth noting that curriculum theory is presently in the doldrums. Twenty years ago, one could find strong, functional recommendations for practice. Taba (1962), for example, had these words of counsel:

> One factor in learnability is the adjustment of the curriculum content and of the focus of learning experiences to the abilities of the learners. . . . The problem of making the curriculum learnable involves also the task of translating the social heritage into experiences which help each student to make it his own. (pp. 282, 283)

One finds similar advice in Tyler's (1949) small but influential book (cf. pp. 65 ff.).

Another example of general curriculum recommendations comes from Bruner's (1960) reaction to the Woods Hole Conference on elementary science. The post-Sputnik era called for action, and Bruner had this to say:

> . . . we have reached a level of public education in America where a considerable portion of our population has become interested in a question that until recently

> was the concern of specialists: "What shall we teach and to what end?" . . .
>
> . . . There has always been a dualism in our educational ideal, a striving for a balance between what Benjamin Franklin referred to as the "useful" and the "ornamental." . . . The concept of the useful in Franklin and in the American educational ideal afterwards was twofold: it involved, on the one hand, skills of a specific kind and, on the other, general understanding, to enable one better to deal with the affairs of life. . . .
>
> . . . Grasping the structure of a subject is understanding it in a way that permits many other things to be related to it meaningfully. To learn structure, in short, is to learn how things are related. . . .
>
> . . . Yet the diversity of American communities and of American life in general makes equally imperative some degree of variety in curricula. . . .
>
> We may take as perhaps the most general objective of education that it cultivate excellence; . . . [which] here refers not only to schooling the better student but also to helping each student achieve his optimum intellectual development. Good teaching that emphasizes the structure of a subject is probably even more valuable for the less able student than for the gifted one, for it is the former rather than the latter who is most easily thrown off the track by poor teaching. (pp. 1, 4, 7, 9)

Bruner and Taba both represent the tension between common goals and principles of learning, and the need to reflect the diversity of students and communities in the character of the curriculum.

Still another guiding principle of curriculum of the 1960s was the expertise of the academic scholar in conceptualization and creation of the curriculum. Man, a Course of Study was developed at Harvard by Bruner. Several science curricula were designed at various universities throughout the country, and the "new math" sprang forth at Stanford.

The situation as we approach 1980 is quite different. A task force set up by the National Institute of Education (1976) has effectively decided that the Institute should play relatively little or no role in curriculum development and associated research and evaluation. The reasons for this decision are complex and manifold, but at least in part they reflect a rejection by parents, students, and (most of all) teachers of the sorts of curriculum that were created by academic experts. We suspect further that the rejection reflects in part a mismatch between the diversity of students and teachers and the relative homogeneity of the classrooms familiar to those who live on college campuses.

Whatever the merits of this conjecture, it is clear that there is a strong move toward "localism." Individual districts, schools, and teachers feel that they have a need, right, and responsibility to undertake the selection or construction of curriculum materials appropriate to local conditions. The present politicized situation is summarized by Apple (1977):

> 1. . . . The classic curriculum questions of what shall be taught and how programs shall be organized are overshadowed by the desire to be consulted and involved in making curricular decisions. . . . Concern for "who should make curricular decisions?" appears to take priority over "what shall be taught?"
>
> 2. This concern for involvement is accompanied by a feeling of impotence, of not being heard and having only a limited scope of influence. There is also the view rather widely held, that somebody else controls the ball game, be it professionals, bureaucrats or some ubiquitous "they."
>
> 3. The claims and charges [about where decisions are made, who is or isn't listened to, and what now exists in school programs and must be changed] are often so contradictory or mutually exclusive that one is led to wonder what actually goes on in schools, whether generalizations are possible and whether anybody knows.
>
> 4. Although approaches to resolving curriculum dilemmas did not come up in the interviews, the designated arena for resolution is local.
>
> 5. There is widespread dissatisfaction with the failure of past strategies of curriculum development and change to enlist the collaboration of interested groups. Consequently, it is doubtful that any approach guided solely by "experts" will capture more than a limited constituency. Further, our analysis of what individuals and groups are saying reveals no strategies likely to capture the imagination of others. (p. 357)

Where does this micro-history leave us? On the surface, a review reveals substantial diversity in what is available across the range of schools. For individual students and their families, however, it is the variety of alternatives accessible to them as individuals that matters, and not what might exist elsewhere. For instance, "alternative" programs have been established in some communities and even within some schools in order to better provide for the varying needs of students and to accommodate the varying preferences and competencies of teachers (Duke, 1978a; Goodlad, 1975; Saxe, 1972). Some alternatives are associated with more or less radical reforms in education, with "freedom" and "openness." Others appear to be rather pedestrian extensions of longstanding practices (e.g., Duke, 1978a, Ch. 3, shows that alternative programs are not much different curricularly from regular schools). One of the more interesting discussions of alternatives, in our opinion, is Weinberg's (1975) account of the potentially significant social functions of alternative schools and classes. The pragmatic (and occasionally controversial) categories in his list include:

> Attendance. . . . Proposed alternatives range from suggestions to do away with all compulsory attendance to such variations as a mixture of compulsory and voluntary attendance, compulsory attendance in school but voluntary attendance in classes, and contract arrangements whereby students agree to attend some activities but not others. . . .
>
> Organization. . . . Schools are formal places where interpersonal relations are governed by role expectations. . . . Alternatives [include] variations in patterns of authority and control, new ways to determine sanctions, and possible shifts in the way school participants relate to each other. Egalitarian decision making and informal personal relationships are two possibilities. . . . Might not teachers supervise each other, students teach, administrators assist teachers as resource persons?
>
> The Adaptive Structure. . . . A primary component of adaptation is the structure of efficiency on which educational processes are based. The importance given to efficiency in conventional school systems is made more evident by the dominant adaptation of alternative schools, which generally take the opposite tack. Whereas public schools organize their resources and accomplish their tasks on a cost-budget basis, alternative schools often advertise a low student-teacher ratio. This ratio is not always (actually seldom) a

result of being able to afford more teachers; rather it derives from a different approach to organizing students for learning. That is, small groups on a volunteer basis may engage in a lesson, while others under the supervision of a parent or an older student are doing other things more or less on their own. . . .

Socialization. One function that all educational systems adopt, in partnership with such other institutions as the family and the church, is to produce moral and reliable citizens. . . .

Established values and skills need not remain so, of course, and many alternative structures already exist in alternative schools. Instead of accepting the notion that all children must learn how to read, write, and figure, some schools deemphasize such "basics" and allow children considerable time and choice to gain these skills. . . .

The main thrust of alternative structures is to avoid the hypocrisy that is often implicit in the way schools go about implanting values. They teach the value of trust and do not trust students; they teach democracy in an authoritarian manner; they stand on their belief in equal rights and equal opportunities regardless of race or sex, but every sociologist who has ever inquired about these phenomena has detected racism and sexism almost anywhere he (or she) looked. . . .

Integration. The structure of integration is the means whereby persons discover their relationship to others in the system, both in terms of formal requirements and informal relationships. . . . Within this total operation exist individuals who possess different social characteristics--age, sex, race, socioeconomic status, and ability. How do schools integrate these individuals? What is the basis of this integration? The patterns are well known. The alternatives should be equally obvious. The conventional method is to group children according to ability and segregate them along lines of age, sex, race, and socioeconomic status. Perhaps the first, ability grouping, accounts for much of the other. . . .

> Real integration would mean that persons, regardless of those characteristics I have discussed, would have access to the same resources--both the school's offerings and each other. No one questions the educational value of informal contact between students. If this exchange were institutionally encouraged, even arranged, a genuine alternative to the segregated structures of much of present-day schooling would emerge. (pp. 55-60)

Conventional programs have existed for some time that are designed to provide alternatives. Tracking, "pull-out" classes, and continuation schools are all examples of efforts to augment or supplant the regular classroom program for students with special needs. "Individualization" is the term generally used to describe the teacher's efforts to arrange curriculum alternatives within the classroom (e.g., Talmage, 1975). "Small-group teaching" (Sharan & Sharan, 1976) represents a more practical approach to the same goal, it seems to us. A totally individualized curriculum is probably neither desirable nor realizable, even though computer technology might make such an approach possible in some form. The existing evidence on teacher effectiveness suggests that either teachers cannot implement a totally individualized curriculum, or that there is no advantage in student achievement gains from such a program (cf. McDonald & Elias, 1976; inter alia). Analysis of classroom management procedures (e.g., Calfee & Brown, 1979) suggests that these skills are an important feature of curriculum implementation and diversity, especially if the teacher is to provide alternatives for different groups of students within the classroom.

Grannis (Chapter 13) points out one other facet of the curriculum that deserves a remark--the nature of the materials. Of particular importance is the match between the materials that the young child typically finds in the home and community and the context of the school:

> . . . Outside of school, young children's interactions are almost invariably mediated by physical things, the toys and found objects, spaces, and surfaces of children's play. These things yield "objective" feedback, and they serve as props to sustain role taking in fantasy activities. Physical things are essential to the social order among children that the classical kindergarten recognizes. Physical things, however, have the potential of conforming or disconforming an unlimited variety of actions taken upon them. Blocks can be weighed, stroked, thrown, piled on top of one another, arranged in geometric patterns, etc., each with consequences that match or fail to

> match expectations. Many educational goals, however, particularly those measured by conventional tests of academic achievement, (a) entail operations on symbols, and (b) involve a restricted set of operations. It is for both of these reasons [sic!] that there is a strong shift away from the use of manipulatives toward almost exclusively symbolic materials between kindergarten and third grade, as Goodlad and Klein (1970) found in observations of a large sample of classrooms in this range. Piagetian educators object to this on the grounds that it is necessary for children to develop schemata through operations on concrete objects before, or in conjunction with, the children's internalization of the operations. However much this may be disputed, it remains clear that by removing concrete objects from the classroom, the rules that govern young children's interactions are changed. Ross, Zimiles, and Gerstein (1976) found a much higher rate of child-child interactions, and a higher proportion of teacher-child interactions initiated by the children, in a set of open primary-grade classrooms than in a comparison set of traditional classrooms. Although the authors did not make the specific connection suggested here, they reported substantially more time spent in settings with manipulative materials, in the open than in the traditional classrooms. The absence of objects requires that new controls be established in the classroom, typically ones that involve a heavier imposition of adult authority, with or without systems that manage symbolic materials in relation to specified objectives, most often workbooks, and in a variety of cases more complex systems like IPI. Thus the problem of designing a milieu that is congruent with educational goals can involve conflicts between different goals--say in this case the children's academic test performance and social competence--at one and the same time. (pp. 12.47-12.48)

Grannis also notes that the design of materials can affect the role of the curriculum in fostering the incidental outcomes of instruction. For instance, materials can encourage the child to work independently, or to rely on the teacher:

> . . .the children [in Barker & Wright, 1955] sometimes were provided with materials that furnished direct feedback, for example, manipulative materials

> or workbooks with answers in the margins, while at other times the children had materials without direct feedback, for example, workbooks without answers, or simply no materials at all. (p. 12.8)

The physical environment. The third component of classroom diversity is the physical character of the environment. The size, the facilities, the newness and quality of the accommodations all comprise status features of this component. The ways that teachers and children perceive and utilize what is available comprise the functional features. Several lines of work have potential bearing on the effects of the physical environment on learning; the ecological psychology of Barker and his colleagues (Barker, 1968; 1978), studies of school architecture (Barker & Gump, 1964), and investigations of the open-space classroom (e.g., Cohen, 1973; Roper & Nolan, 1976) are examples. Unfortunately the available information is scanty. In particular we know relatively little about the nature and effect of systematic variation in the physical environment. In the literature that does exist, we find that the importance of the architectural setting is by no means to be disregarded, as the teacher who has tried to "survive" in an open-space school can testify (Roper & Nolan, 1976). As another example, we can point to studies of pupil placement within the classroom showing that attention and work habits depend on where the student sits, regardless of whether he seats himself or is placed by the teacher (Schwebel & Cherlin, 1972; also cf. Piontkowski & Calfee, in press).

Grannis (Chapter 13) also presents some interesting leads as to the potential effects of variation in the physical environment of the classroom in his discussion of "environmental press"--what the environment can do to or for the student (the term is after Murray, 1938). The psychological analysis of the physical surroundings focuses on the stimulus control exerted by the choice of setting:

> . . . Chairs arranged in a circle convey the expectation of the arranger that participants will interact with one another more than do chairs arrayed in rows facing a speaker (Sommer, 1969). An open door invites visiting. "White noise" suggests differentiated activities, "open space" suggests coordinated activities, and so on. . . . Corridors channel behavior, as do time schedules and organizational hierarchies, all of which function on micro-levels in classrooms to channel behavior into, for example, teacher-learner interactions in certain settings. Environmental features can also serve as barriers to behavior, as walls and chasms do most literally, but language differences and status gaps do also. The

> environment furnishes props for some behavior, . . . and equally it can be devoid of props for one activity or another. . . . If this appears to be a strictly architectural viewpoint, it must be stressed that the symbolic functioning of environments is probably much more far reaching than what can be understood in architectural terms also. (pp. 13.4-13.5)

The social environment. Next on our list is the social environment of the student--peers and classmates. The status features include class size, distribution along dimensions of sex, socioeconomic status, ethnicity, and other demographic characteristics. These aspects of the classroom reflect community conditions, decisions by the principal, and perhaps judgment by the courts.

The functional features of the students have to do with their interaction with each other and as a group--the style of interrelatedness, the role of language in communication, and the structural groupings for work and play. Classrooms appear to differ markedly on these dimensions, and the individual child is likely to encounter a diversity of arrangements during his school experiences. An important aspect of the social environment is the way the group handles individual differences between students, particularly those differences that are status related (e.g., Cohen, Note 2).

Many status characteristics may be relative. As Grannis (Chapter 13) notes, in virtually every classroom one finds students fulfilling certain roles--"clown, bully, goat, good boy, bad boy, teacher's helper, the nonworker, and so on. Teachers frequently remark that a classroom would be better if there were not just 'one or two' children who were impossible to deal with" (p. 13.10). The implication is that certain children fall necessarily into these categories. The generalization may fit at the extremes, and we suspect that mainstreaming will add significantly to this mix (for some idea of the problems seen as forthcoming by teachers, as well as by administrators and parents, cf. DHEW, 1979). However, there is some reason to believe that if certain "problem" students (or certain "gifted" students) are taken from a class, other students move into the vacant roles. Relevant to this point is research on age of entry, where at least one study (Weinstein, 1969) has shown that it is the relatively youngest (and oldest!) students who raise difficulty for the teacher. Five-year-olds do all right when there are four-year-olds in the classroom, but they are seen as "not ready" when they are the youngest in a class with mostly six-year-olds. It may be most appropriate for the individual student to encounter a variety of class and group settings, where sometimes he is the biggest, sometimes the smallest, sometimes the smartest, sometimes not so smart, sometimes the teacher, sometimes the learner. Consistent with this analysis is Cohen's (1979) Multiple Ability curriculum, which is based on the concept that experiencing a change in status is an effective method for breaking stereotypes.

The distribution of achievement levels among classmates has not been systematically examined, to our knowledge, but it may be an important feature. In Figure 4, to give a concrete instance of such diversity, we have plotted the distribution of reading test scores from six classrooms in a local school district. The patterns include teachers who have "fairly typical" classrooms and those who must handle widely discrepant groups of students. Differences between classes in mean achievement are known to be commonplace; less is understood about the character of other between-class indices such as variance, skewness, and multimodality. These properties may influence the entire classroom environment, students as well as the teacher. This variable (or set of variables) is a status characteristic, and to understand its effect requires that we examine how the distribution of student abilities might influence classroom functioning. We do know a few things. The center point of the distribution seems to locate the "steering group" for the teacher--that group of average students about whom the instructional program is planned (Lungren, 1972). Also we suspect that the distance between a student's ability and the classroom average is what matters from the teacher's point of view, and not the student's absolute standing.

The school. Finally, we will note that the school itself is a source of significant diversity. The status characteristics of the school (size, age, appearance) can again be determined by census. The functional characteristics are less well understood, but we are beginning to see some work on the school as a social system, and the role of the principal in determining the operation of that system (Cohen & Miller, 1979; LaPlant, 1978; Lipham, 1977; McLaughlin & Berman, 1977; McLaughlin & Marsh, 1978; Sarason, 1971; Talbert, 1979).

Some observers of the American educational scene find serious fault with the way that schools are organized. "We have organized our schools to sort children into achievers and nonachievers and that is what we get. If we organized our schools for the normally rich development of all our children, we would get something quite different" (McDermott & Aron, 1978. p. 44). This quote suggests both a plot and a promise. Given the incredible diversity of the local school systems in America, we find it difficult to identify the "we" to whom McDermott and Aron refer. The "something quite different" is also intriguing. We suspect it will not arise from the foiling of some plot, but from an increase in the rationality and accountability of local American school systems. In fact, the evidence seems to be that the typical American public school is so disorganized ("loosely coupled" is the jargon) that the responsibility for any particular decision is hard to pin down (Davis, Deal, Meyer, Rowan, Scott, & Stackhouse, 1977; Weick, 1976). This state of affairs may be workable (or at least bearable)

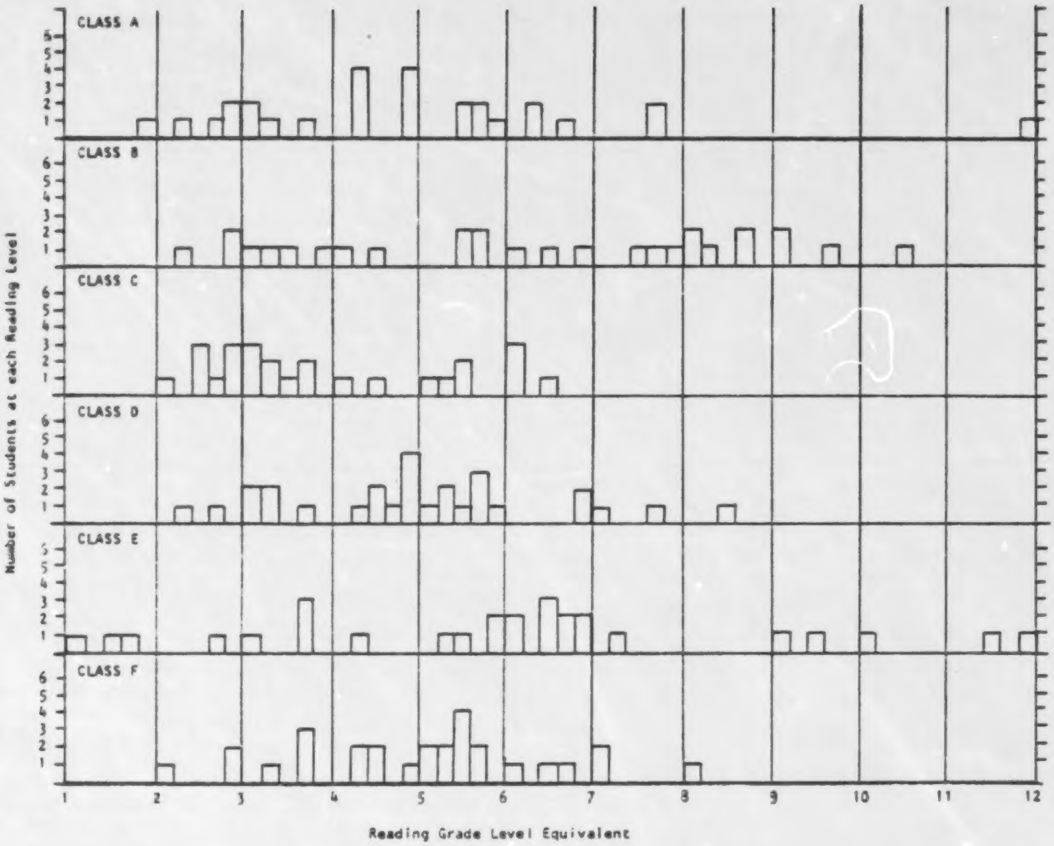


Figure 4. Distribution of reading test scores from six classrooms. The patterns include "fairly typical" classrooms and those with widely discrepant groups of students.

in a time of expansion, but when enrollments and resources are declining, the school may have to change its modus operandi.

Section IV. Diversity in Students

Individual differences in student characteristics are what people generally have in mind when they mention human diversity in the context of education and instruction. From the analysis up to this point, we think that a strong argument can be made for including an examination of other sources of diversity, and of the interactions among these sources. In making this point, we are enlarging on the theme developed in considerable technical detail by Cronbach and Snow (1977).

In this section we do not intend to recapitulate the detailed examination of the other chapters in this book. Rather, the goal is to relate the main points to the theoretical framework that has been presented, in order to integrate what is known and to clarify what remains to be studied. We will focus our attention on the individual as a student, that is, as a learner in the instructional system.

As a beginning, we can consider the components of diversity, the major separable dimensions along which student diversity might be organized. These components include the student's characteristics as a physical being, as an intellectual being, as a social being, and perhaps as a spiritual being. All four of these components strike us as significantly related to educational goals and practices--existing treatments of student diversity place considerably more emphasis on some of these aspects than on others, to be sure.

Status characteristics. For each of these components, we could prepare a specification of the status and functional features along which students differ. We will not attempt such detail here; to do so would go beyond the purposes of this chapter. However, we can exemplify the concept. Among the status characteristics often used to describe student differences are sex, race, and age (physical); achievement, intelligence, and creativity (intellectual); and friendliness (social). These descriptors of the student, along with socioeconomic status, are either immediately obvious, are communicated through the cumulative folder or conversations in the teachers' lunchroom, or are indicated by test scores, casual observation, or stereotypic judgment. Among the status features that are assigned to the students from this process are labels such as gifted, learning disability, special education, English-as-second-language, Title I, Aid for Dependent Children, free-lunch, and so on. The intention to correct inequality sometimes accentuates differences.

Bond's (Chapter 3) analysis of the student's socioeconomic level illustrates nicely the limitations of status characteristics as a guide for action. The correlation between social class and school achievement is one of the most pervasive findings of American educational research. What does it mean, and what if anything should be the response of the schools to this finding? As to what it means, Bond suggests four interpretations:

1. Economic impoverishment is the result of genetic inferiority.
2. Poverty leads to cultural disadvantagement and thereby to inappropriate preparation for school.
3. Children from lower social classes receive inferior instructional treatments.
4. The school has the implicit responsibility of maintaining social-class distinctions.

As Bond notes, the last two interpretations are not easily distinguishable. Which of the four interpretations (or what combination) are most properly used to explain the effects of socioeconomic status? The available research does not tell us, and so the designation tells us only that the correlation exists, not what to do about it.

Functional characteristics. Functional features of the student require evidence that is not so readily apparent, that builds upon interaction and close observation. Children differ in their physical size and dexterity, but as the advocates of movement experience know, there are also variations in students' facility in the use of their physical heritage (Edington & Edgerton, 1976). As to the functional differences in intellectual ability, we will note here only a few points. First, students differ not only on general level of achievement and intelligence, but in the distribution of skills and knowledge. Some are capable in many contexts; others excel in a few areas (e.g., some people are especially good at multiple-choice tests). Second, the patterns of variations in intellectual profiles are not measured by most standardized tests (the subtests are so highly correlated that reliable distinctions cannot be made, Thorndike, 1973). Third, the general trend is for the student's relative standing on intellectual and academic measures to remain unchanged over time (Bloom, 1964), although recent evidence suggests that some teachers are able to avert the prediction of failure. The low-performance students in their classes are not necessarily doomed to remain on the bottom rung of the achievement ladder (Calfee & Piontkowski, Note 3; McDonald & Elias, 1976).

To understand the functional characteristics of the individual student--how he uses mind and body, relates to others, and comes to an appreciation of life's more ultimate values--requires the investigator to "get beneath the skin," as it were, and to go beyond standardized tests. The contrast between status and function is reflected as well in the difference between prediction and control versus understanding. An optimistic statement on this point is expressed by Tyler (1978):

> While the change in objective is still far from complete, more and more psychologists are seeing their purpose as that of understanding some of the reasons people behave as they do, so that scientists and the people who cooperate with them in research undertakings . . . may be able to manage their individual and collective affairs more adequately. Enabling people to anticipate the consequences of their own acts is a different and ethically much more attractive aim than enabling some persons to predict and control the behavior of others. (p. 4)

We see a move in the direction of functional differences in the discussion by Shipman and Shipman (Chapter 12) of cognitive styles--field independence, categorization mode, and reflectivity.[1] The contribution of the Shipmans is to point out that these stylistic variables are best conceived of as "information processing habits," in part predispositional, in part learned, in part context dependent. It is important to the classroom teacher to know the child's style; it is equally important to realize that the style is not fixed for all time, but is subject to modification. Instruction is likely to proceed more felicitously if style is taken into account, but style is not a sufficient reason for expecting or ascribing failure. Moreover, the student is likely to benefit in the long run by occasional experiences in which there is a mismatch in teacher-student styles.

Another taxonomy is found in Thomas' (Chapter 11) paper, in the discussion of "temperamental constellations" (i.e., the Easy Child, the Difficult Child, and the Slow-to-Warm-up Child) (p. 11.10). These classifications can serve as labels, and Thomas has less to say about the intellectual functioning that underlies each label. However, he does have something to say about relevant educational treatments, as we shall see below. This work builds on the previous study by Thomas, Chess, and

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[1] As they note, each facet is primarily associated (and hence confounded) with a single assessment instrument, with consequent limitations on the extent of permissible generalization.

Birch (1968), which led to the identification of nine temperamental categories of potential relevance to classroom instruction--to be sure, the relationship remains to be fully spelled out:

1. Activity level
2. Rhythmicity
3. Approach/Withdrawal
4. Adaptability
5. Intensity of Reaction
6. Threshold of Responsiveness
7. Quality of Mood
8. Distractibility
9. Attention Span and Persistence

None of these categories is directly related to curriculum, but all seem relevant to the dynamics of classroom instruction. Cole (1979) questions whether we should trust statements about "general dispositions" until their effects are established over a range of educational and other contexts, a position with which I concur. It is not just that these constructs depend on a single test, but on a limited set of testing contexts. Bem and Allen (1979) also make the point that an important difference between individuals may be the degree to which their behavior or style is consistent over a range of different situations.

Response to instruction. One especially significant set of functional characteristics of students is their responsiveness to instruction, their adaptability, their capacity to imitate the models provided during instruction. Achievement tests and other measures of intellectual performance are not intended to reveal individual differences in learning rate; indeed, an analysis of the properties of these indices shows that they cannot provide such information (e.g., Harris, 1963). Stevenson and his colleagues (Stevenson, Friedrichs, & Simpson, 1970; Stevenson, Hale, Klein, & Miller, 1968; Stevenson, Williams, & Coleman, 1971) have for some years searched for a common factor underlying the acquisition of skills and knowledge, but to little avail. There is a diffuse commonality, not easily differentiable from general intelligence. Similar results have been obtained by Hunt (Hunt, Frost, & Lunneborg, 1973; Hunt, Lunneborg, & Lewis, 1975) and by Carroll (Note 4). Tyler (1978, p. 77) reviews a similar set of findings going back to the 1940s.

Equally disappointing with regard to functional differences among students is the literature on aptitude-treatment-interaction (Cronbach & Snow, 1977). In its most general formulation, this work brings together diversity in instructional programs, teachers, and students, and proposes that these facets may not combine in a simple additive fashion, but may interact. To the extent that such interactions exist, it is sensible to look for the instructional program and the teacher that are optimally suited to the individual student. Cronbach and Snow, after detailed examination of the available research on this matter, find some instances of substantial interactions, far more instances of null interactions (and negligible main effects), and in general a research base poorly controlled to detect patterns of differential response to instruction.

McKeachie (1978) summarizes succinctly the major conclusions of the Cronbach-Snow review:

> 1. . . . This finding is somewhat surprising in view of the cogency of the earlier argument by Cronbach and Gleser (Psychological Tests and Personnel Decisions, 1957) that tests designed to predict over a variety of treatments are not likely to be useful for differential prediction. Nevertheless, in general, when more help is provided for learners (for example, advance organizers, step-by-step analysis, study questions), the regression slope between ability and outcome becomes flatter.
>
> 2. Although specialized abilities, such as spatial ability, or the even more specialized abilities of the Guilford model, do not interact with treatments as might be expected, prior experience interacts consistently with treatment. People apparently do learn how to learn from a particular method of instruction.
>
> 3. Students high in constructive motivation (e.g., achievement via independence) do relatively better in classes in which teaching is less directive; students high in defensive motivation (e.g., anxiety, introversion) do better when there is less demand for self-direction. (p. 706)

Cronbach and Snow (1977) have a thoughtful remark to make about the adaptation of instructional practice in the public school to variations in the students who attend those schools:

> We may distinguish between two broad kinds of adaptation. One is to choose different educational goals for different persons, and the other is to choose different educational means toward the same goals. The former serves to develop the person's capacity for self-expression in work and leisure. It cannot be the only policy, however. The easy escape of shunting some students into a "nonacademic" curriculum

> cannot be tolerated, so long as proficiencies formerly considered "academic" are necessary for most kinds of success and participation in society. Educators have to invent methods to open opportunity to persons who would not attain traditional goals in traditional ways. (p. 522)

We would add a couple of points to this discussion of the Cronbach and Snow findings. One is that the choice of what to measure is critical to the detection of aptitude-treatment-interactions--as Walker and Shaffarzick (1974) reported, the choice of the measurement is also critical to the assessment of the main effects of programs. More generally, the task is to plan a treatment-aptitude-measure design that provides adequate control for the evaluation of an instructional system (cf. Calfee & Hedges, in press, for a theoretical discussion of this approach).

The second point has to do with the importance to the student of learning to deal with diversity in situations and people. If a truism fits modern life, it is that one should expect to encounter variability. For instance, Inkeles and Smith (1974) in their "definition" of modern man include such phrases as "openness to new experience . . . readiness for social change . . . awareness of the diversity of attitude and opinion . . . a positive value on variations in opinion . . ." (pp. 19-21). It is consistent with our earlier theoretical analysis to propose the school as the major training ground for the development of competence in handling diversity. It is, to be sure, equally important that the school assist the individual during these experiences in the development of a strong and secure concept of himself, so that the individual can retain his own identity during encounters with others.

One particular class of interactions, which may be of significance to education, but that was not covered by Cronbach and Snow (however, cf., the work of Domino, 1971, on the interaction between teacher-student dependence-independence), is discussed at length by Grannis (Chapter 13) under the heading of "The Environmental Docility or Susceptibility Hypothesis." The concept, which comes from the work of Lawton and Simon (1968), is that the extent to which a person determines his own path or is influenced by the environment depends on his competence relative to the demands of the environment.

> . . . The analysis by Grannis also distinguishes three classes of educational goals--goals of community, individuation, and competence. Community is held to entail the greatest degree of control by a collective other, individuation the strongest control by self, and competence a joint control by a collective other and the self. Examples of community goals

> include the observance of customs and the learning of significant names and symbols, not least in our own culture the names of numbers and the letters of the alphabet. Individuation includes self-expression, exploration, invention, creativity--the various performances in which there is the greatest emphasis on the individual's own criteria for thought and action. Competence, in this analysis, refers most clearly to the mastery of the concepts, skills, and attitudes of a discipline or craft. The argument, then, is that control by the collective other, including the individual learner as a member of the collective, is most congruent with goals of community, that control by learners as individual selves is most congruent with goals of individuation and that joint self-and-other--more narrowly, joint learner-and teacher--control is most congruent with goals of competence. (pp. 13.48-13.49)

The person who is secure and confident is relatively unaffected by variation in the surround; the person who is "deprived," weak, unhealthy, inexperienced, and so on, is at the mercy of events around him. Competence, in this way of thinking, is partly a matter of learning and experience. The person who lacks competence achieves it through experiences in relatively safe environments. Thus smaller schools provide settings for the development of individual students who in the context of a larger school would fall by the way (Barker & Gump, 1964; Willems, 1967). The environment of a larger school is undoubtedly more stressful; the marginal students feel less competent, but in addition it is easier for them to simply get lost in the crowd. Even if they become aggressive, such behavior may be for all intents an "escape." As another example, small classroom groups provide more able students with an opportunity to help others who need help--with the result that the better students learn more (Peterson & Janicki, 1979), a result commonly observed in tutoring (Ellson, 1976).

Grannis' discussion is intriguing as he attempts to sort out the effects of sex, field-dependence, aggressiveness, and group size (crowding). These variables influence both students' and teachers' tendencies to aggress, to withdraw, or to overcome. The more competent students and teachers have a wider range of choices about how they will behave under environmental variations--a definite plus.

Section V. What Is Known and What Needs to Be Known

From the reviews in this book and from our own analyses and knowledge of the field, we think that several generalizations can be drawn that should be helpful to practitioners. We will organize these remarks according to four themes: staff development, curriculum design, assignment of students to programs, and management of classroom instruction. At the end of the section, we have some comments about the improvement of methodology for research on instruction, taking into account what we know about human diversity.

Staff development. It seems to us that four matters are central to staff development for enhanced instructional diversity:

1. increased knowledge about the nature of individual differences,
2. greater familiarity with program variations,
3. the concept of interactions between individual differences and program variations, and
4. the availability of practically feasible models.

We cannot deal with all four of these matters in this chapter. Rather, we will say something about the first matter. What can teachers learn about stereotypes that might alter the way they deal with students? We will focus on the status characteristics of sex and socioeconomic standing.

People often rely on stereotypes as a basis for action in brief social encounters--a black person is perceived as lazy, but physically capable; a woman as dependent, but nurturant; and so on.

Teachers, like most people, are influenced by stereotypes when they think about their class. However, teachers may differ from "most people" in two significant ways with regard to stereotyping students. First, their encounters with youngsters are far from brief; to the contrary, they are long-term and intensive. For thirteen or more years of a youngster's life, more than half the waking day is spent in the company of one or more teachers who have the charge of guiding the child's growth. The teacher has access to a great deal of information that may either confirm or disconfirm the stereotype impression. Second, and more vital, the teacher has the opportunity (and perhaps the mandate) to influence the stereotype to confirm it as a self-fulfilling prophecy, or to aid the student in realizing his own goals quite apart from the stereotype. If we are to believe Pygmalion in the Classroom (Rosenthal & Jacobsen, 1968), the teacher may instill the achievement called for by the student's status characteristics. The Pygmalion study has been severely criticized (Elashoff & Snow, 1971), but other studies support the notion that teachers do have different expectations of students and that these expectations are related to how they treat the students (Elashoff & Snow, 1971, pp. 57 ff., and references). On the other hand, teachers also have the time and opportunity to counter the expectation, and some evidence suggests that certain teachers are effective in just this manner, as we shall see later in this section.

As examples of the kind of information that we think might profitably be brought into better focus for teachers, we will comment briefly on two status features, sex and socioeconomic status. Both facets are controversial, but in the case of sex we think it is possible to sort out what can and cannot be attributed to this characteristic, whereas in the case of socioeconomic level, the picture is much less clear.

As any observer of the American scene is aware, the equality of the sexes is a matter of considerable discussion and argument. At the one extreme are those who claim that differences between male and female are trivial, and comprise an insufficient basis for the many inequities suffered by women (and men as well; cf. Journal of Social Issues, 1978). At the other end of the spectrum are those who continue to see obvious and by no means trivial differences.

Research on sex differences has not reached agreement on the facts, but sufficient convergence exists as to major areas of sex differences and nondifferences to provide guidance to the teacher. Notice that we are not saying that the research is presently translated into a format suitable for practical application, only that the basis for such a translation exists. A survey of the literature suggests that males and females differ on a number of sensory and motor abilities, and on certain intellectual and social abilities as well. McGuinness (1979) summarizes some of these differences:

> . . . newborn boys are significantly more active than girls: Boys are awake more, show more low-intensity motor activity (head turning, hand waving, twitching, and jerking) and more facial grimacing than girls.
>
> . . . rough-and-tumble play remains exclusively male, as it does in other primates. The male's larger muscle mass (at maturity 40 percent of body tissue as opposed to 23 percent in the female) and superior integration of sight and motor skills give rise to excellence in fast gross motor action. Males characteristically explore their world, and they manipulate objects by taking them apart. From about the age of nine or 10 years, males show superior performance in

> tracking tasks. . . . As human beings get older, the difference between the sexes increases. Male strength and men's speed and accuracy in sports are well known.
>
> Females excel in fine motor control. . . .
>
> . . . Girls speak sooner, with greater fluency and grammatical accuracy, and use more words per utterance than boys do. . . .
>
> The rate of babbling appears to be identical in boy and girl babies, but girls tend to develop consistent mastery of language in both reception and execution, and they talk more with their mothers than boys do. . . .
>
> . . . females showed overwhelmingly greater sensitivity to pressure on the skin in every part of the body, but males and females did not differ in distinguishing the distances between two points of pressure. Females therefore have a heightened ability to detect the presence of a stimulus but are no better than males at the acuity of their touch.
>
> When it comes to hearing, females show specific sensitivities in certain tasks, are equal to males in others, . . . from the time they were six years old, females were consistently better able than males to hear high-frequency sounds above approximately 4,000 cycles per second. These frequencies, which are outside the fundamental range of most musical instruments, provide information about the quality and clarity of sound, such as consonants in speech and the timbre of voices and musical instruments. . . .
>
> . . . women set their comfortable level nine decibels lower than males. As loudness appears to double at about 10 decibels, and these tests involved sound frequencies where the thresholds of both sexes were identical, it appears that at comfortable sound levels females hear sounds as twice as loud as males do. (pp. 82-85)

These generalizations are but a sample of what might be cited--most of these findings entail assessment of sensori-motor performance, and so the effects are likely to be relatively stable, and not influenced by choice of testing instrument and so on.

Disagreement is more substantial when we turn to intellectual and social performance. For instance, a survey by Maccoby and Jacklin (1974) concludes that

> many popular beliefs about the psychological characteristics of the two sexes . . . have little or no basis in fact. How is it possible that people continue to believe, for example, that girls are more "social" than boys, when careful observation and measurement in a variety of situations show no sex difference? Of course it is possible that we have not studied those particular situations that contribute most to the popular beliefs. But if this is the problem it means that the alleged sex difference exists in a limited range of situations and the sweeping generalizations embodied in popular beliefs are not warranted . . . . A more likely explanation for the perpetuation of "myths," we believe, is the fact that stereotypes are such powerful things. (p. 355)

A similar conclusion has been put forward by Sherman (1978):

> Grasping the limited extent of the cognitive differences between the sexes, one is struck by their inconsequential nature, at least in terms of any kind of evidence that would warrant advising boys and girls to pursue different courses or careers on the basis of sex differentials in ability. . . . even without total control of relevant sex-role variables, i.e., even when likely environmental sources of variance are left uncontrolled, the amount of variance attributable to sex is typically at most 5 percent. . . . On the other hand, the large extent of the differences that can develop in cognitive skills between the sexes is a matter for concern. Has it been our intention to divide the population into the pinks and the blues and to develop one set of cognitive skills in the pinks and another set in the blues? If this is not our intent, the educational and social practices that have occurred "naturally" will need reexamination. (p. 66)

Sherman is referring to certain well-established statistics about educational achievement--e.g., between 8 and 10 percent of all elementary school children are diagnosed as "hyperactive" or "minimally brain damaged," and virtually all of these individuals are boys; girls excel in the early years of school, and do at least as well as boys in arithmetic, yet only a small proportion choose mathematics, science, or engineering as a career; and so on.

At present, the debate still centers upon the extent to which sex differences are real or mythical. For instance, Block (1976), after a careful analysis of Maccoby and Jacklin's (1974) book, comes to the conclusion that sex differences are probably more pervasive in the intellectual and social domains than suggested by Maccoby and Jacklin. The debate unfortunately seems to center upon statistical significance--we suspect that someone is hard at work on a meta-analysis (Glass, 1978) of sex effects that will prove conclusively that the effect exceeds the .05 level of significance over the range of studies. Establishing such a conclusion would be of little interest to practitioners, or for that matter to researchers. Practitioners would probably benefit most from an analysis of available literature that provided (a) an idea of the magnitude of the differences and similarities that characterize boys and girls at various stages of development in various areas of physical and psychological functioning; (b) a sense of the implications of these characteristics for handling the individual student; (c) an examination of the effects of context (including instruction) on the magnitude of sex effects; and (d) recommendations of how to adapt instructional content and style to the needs of boys and girls who are at the endpoints of the continuum. We think the existing literature provides some basis for answering these questions, and that such answers would be useful. If Block's (1976) Table 1 is an accurate summary, teachers probably need to become more aware of how they are handling sex differences. However, once again let us say that we need more than the statistical significance values provided in Block's table; we need to know something about the magnitude of the differences, and the amount of overlap in the distributions.

We are also mindful that the teacher has choices in how to deal with boys and girls (Duke, 1978b). We tend to agree with Sherman (1978; also, cf. Bruner, 1960) that "Human plasticity is such that reality, to a large degree, can be what we wish to make it" (p. ix). In this statement may be the dream and challenge of the institution of public education in America--that the reality of the intellectual achievement of a child need not be that predicted by his status, but can be whatever student, teacher, and parents aspire to.

Now let us look at the stereotypes associated with socioeconomic level--a status characteristic par excellence. It is well established that this variable accounts for considerable variance in school achievement, more than most other status labels. However, it is far from clear what this relationship means functionally. Most studies have used socioeconomic level as a generalized index of disadvantagement, with little effort to explore the mechanisms that mediate between the index and school achievement. In many studies, socioeconomic level is confounded with a variety of other variables--ethnic background, minority status, region of the country or neighborhood, nutritional history, educational level of family, and so on.

As the Serrano-Priest decision established, there is also a relationship in this country between socioeconomic level in the community and the resources available for schooling; "natural variation" has provided poor control over this social experiment.

What can be learned from the research? What should the teacher expect from a "child of poverty"? Certainly it would be a mistake to say that the expectation should be an average level of performance. This advice simply flies in the face of the facts. The research provides little analysis and clarification; Clark (1972), Harrington (1962), Holt (1967), and others who rely on anecdotes probably provide a better feel than researchers for the variety that the teacher is likely to encounter. Their remedies, however, should be taken with a grain of salt; they don't work for everyone.

All in all, we suspect that teachers might benefit most from training aimed at increasing their awareness of the range of cultural environments, and their ability to assess the background that their students bring to the classrooms. Harrington (in Chapter 6) and Freedle (in Chapter 7) both emphasize the importance to the teacher of understanding the functional mechanisms by which the child applies his cultural and social background to the classroom situation. They cite numerous instances where a mismatch between teacher and student culture may impair the instructional interaction.

We think that the research findings from educational anthropology may have particular relevance to classroom practice, and that these concepts and methods should be part of the teacher's armamentarism. (For a practical example of one application of our idea, cf. Goodlad & Klein, 1974.) In essence, we are suggesting that the teacher acquire some of the skills of the cultural anthropologist:

> Teachers may learn to become sensitive to these frames as they exist within the majority culture and as they exist within subcultures. In this way the teacher can minimize the many instances in which misunderstandings can occur through gestures, glances, intonation, choice of speech register (emphasis for clarity or for scorn), choice of discourse genre (story telling versus expository form), choice of language code, choice of whether or not to code-switch, and so on. Students may also be interested in learning how these various patterns of communication are employed in different cultures. This knowledge may help them to understand whether a teacher is necessarily abusing them or whether they have in turn misinterpreted the contextual cues of the majority culture. (Freedle, Chapter 7, p. 7.27)

Our only quarrel with the anthropological approach that we recommend as part of staff development is that it may have its own unique flavor of stereotyping. For instance, we read an account by Freedle in Chapter 7 of research by Weeks (Note 5), who reported that Yakima (Indian) children often have "nonspecific language problems" in school, that their background makes them reluctant to admit that they cannot answer a question by saying "I don't know" or by guessing. As a consequence, they are presumably perceived as unresponsive, noncompetitive, unmotivated, impertinent, and perhaps ignorant. We do not doubt that some Yakima children behave this way; so do some "Anglo" children, whatever this classification means. It may even be that Yakima children are somewhat more inclined than other groups to respond in the fashion described and for the reasons given. The context may matter; Indian children are likely to be more assertive on a basketball court or in a rodeo, to the degree that they react in a typical way.

We still think that the advice implicit in this report is questionable--the teacher should not expect all Yakima or all Indian children to behave in an unresponsive manner. Such behavior in any child calls for an assessment by the teacher of the functional reasons for the actions, and for the development of an instructional program that helps the child achieve to his potential. It is not enough to explain the behavior by the ethnic identity. Any child, Yakima or other, who is to do well on group-administered multiple-choice tests must learn to make the best use of partial knowledge. The teacher's task is to aid students in spanning the gap between their culture and the "cultures" of work and school that are the realities of contemporary society (cf. Goodnow, 1972).

Curriculum development. As noted above, not too many years ago our country was busily engaged in a frantic search for the one, best, teacher-proof curriculum--in reading, mathematics, science, and other areas of human knowledge. Unfortunately, these "optimal" programs could not be reliably distinguished from the run-of-the-mill. Educators and citizens questioned the starting assumptions and ending goals of many of the innovative curricula, and minority groups pressed forward the aims of multicultural education. The result of all these pressures appears to be an increase in, or at least a greater tolerance for, diversity in curriculum programs. Although included here under the heading of "what we know," in fact our actual knowledge about curriculum diversity is not very extensive. One finding that seems to turn up consistently is the presence today of greater variety in curriculum materials, largely due to the impact of federal aid programs (Dixon, 1979). Two decades ago, most classrooms relied on a single basal series for instruction in reading; similar limitations held for other subject matters. Today, one finds a wide array of materials--books, basal series, but also audio-visual materials, games, the omnipresent ditto sheets, and even an occasional television set.

In spite of this increase in materials, the finding that has become throughly established during the past decade is that it is the implementation of a curriculum that matters, and not the label over the classroom door. Perhaps no practical person would have thought otherwise. Nonetheless, beginning with the First Grade Reading Study of the early 1960s, and continuing through the experiments of Planned Variation in Follow-Through, evaluation research has reportedly shown that variation within a program is substantial and generally much greater than variation between programs. Some see this result as a negative finding, but we see a positive side--as Good, Biddle, & Brophy (1975) put it, teachers make a difference!

More to the point, schooling makes a difference. The picture is still a bit uncertain, but we are beginning to gather replicable evidence about the conditions that promote growth in the basic educational skills (Calfee & Shefelbine, in press; Gage, 1978, Note 4; Schutz, 1979). Of particular interest with regard to equity and diversity are those findings that show it is possible for the student to "beat the odds."

On the one hand, Bloom's (1964) treatise could be viewed as casting grave doubt on the meaningfulness of the term "equal educational opportunity." His general finding was that grade 12 performance was predictable by the time the student finished grade 4; the correlations were on the order of .75 or better. Practically speaking, such a high correlation means that the child on the bottom rung of the achievement ladder in the middle elementary years will enter the work place on the bottom rung, and vice versa. Bloom (1976; also cf. Block, 1974) has recently put forward the concept of mastery learning as a curriculum strategy for breaking the lockstep of success and failure. While the mastery approach has attracted considerable attention, it does not yet appear to be a universal panacea for instructional pains.

On the other hand, McDonald & Elias (1976) reported findings from a large-scale survey of California elementary schools that certain teachers accomplish the goal of changing the relative ranking of students within a single school year. In Figure 5 are shown the patterns of gain scores for the most and least effective classes in second-grade reading and mathematics instruction. The solid reference line is based on the starting point for the total sample of more than ninety teachers. The dashed line segment is the actual set of scores for the individual class. The hatched area represents the relative classwise-gain achieved by the teacher and the curriculum program during the year. It is clear that some teachers in this sample promote substantially greater than expected performance among the lower-achieving students--the student on the bottom rung has a chance to move up! Other teachers, especially in mathematics, appear to promote relatively greater advances by the more able students, thereby increasing the extent of inequity. Many teachers simply pass

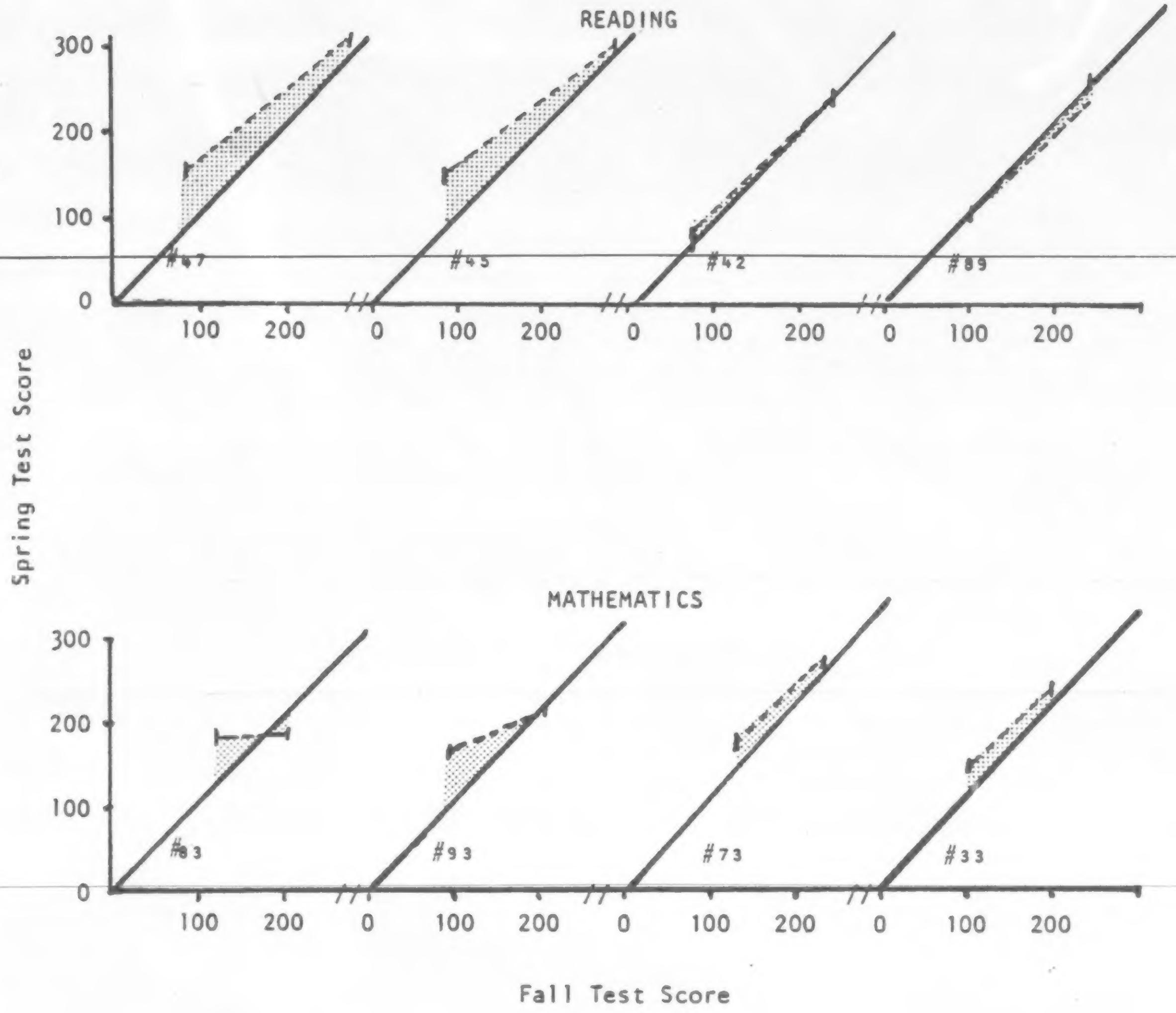

Figure 5. Patterns of gain scores for most and least effective classes in second-grade reading and mathematics

forward students with relatively unchanged rankings vis-à-vis their classmates. This appears to be the modal practice.

Another instance of a curriculum program that rearranges preexisting differences in student achievement in the early grades is the reports by Hanson and Schutz (1975, 1976) on the effects of the SWRL reading program. This program is modular, and so it is possible to determine the number of instruction units completed by each individual student. Status characteristics such as entry level, family income, ethnicity, and sex are all positively correlated with the number of instructional units completed by a student. However, an even stronger relation holds between achievement on standardized instruments and number of instructional units completed, independent of status characteristics. Figure 6 shows performance on one of several tests that were administered; the others show a comparable pattern. The significant finding in every panel is that test performance depends on the number of instructional units completed by a class, and is virtually independent of the status characteristics of the class. The SWRL data provide a paradigmatic example of how one might achieve separability of status and functional characteristics, and in this instance it is clear that the functional aspects are substantially more relevant. Lower status students complete fewer instructional units, but where students vary within the status categories in the amount of work completed, success follows.

Our chief conclusion is that there is considerable diversity in the curriculum programs now available (e.g., NIE Catalogue of Products, 1975), and that existing commercial and governmental activities continue to generate new alternatives. School people often tend to propose a "new curriculum" as the solution to educational problems. There is undoubtedly some value in such activities--the work leads to a sense of ownership, among other things. However, we would urge school people to make themselves aware of the alternatives and build upon those to the extent possible (e.g., through searches of ERIC and the associated clearinghouses, and through agencies like the RDX). Rebuilding the wheel takes time and energy that might be better spent on adapting existing materials and ideas to local conditions, rather than starting from scratch.

Assignment of students to programs. The McDonald-Elias and SWRL results support a fairly common finding in the literature on aptitude-treatment-interactions: more able students perform well in a variety of programs, whereas those students who are less appropriately socialized to schooling do well only when the instructional program is suited to their knowledge and is fairly directive (Cronbach & Snow, 1977). A related suggestion comes from Jensen's (1973) distinction between Level I- and Level II-type learners. The Level I student learns most easily by repetition and rote memory; the Level II student is facile at reasoning and problem solving, what Frijda (Note 5) has called the "autonomous

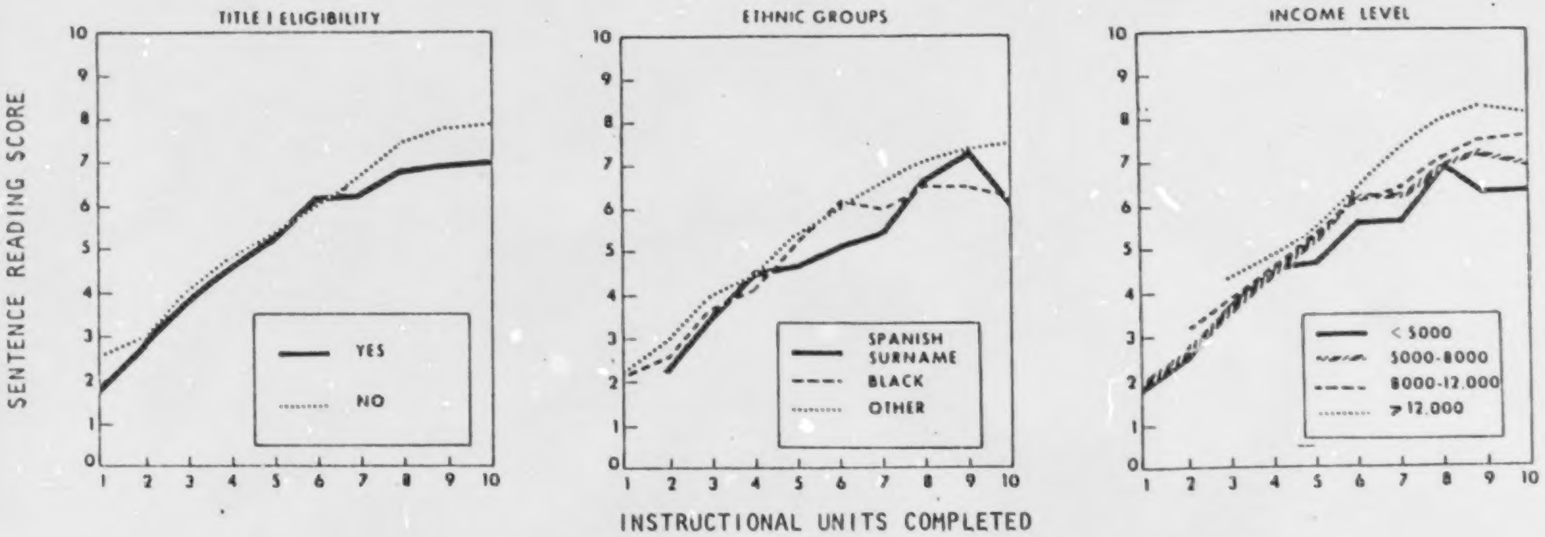

Figure 6. Reading performance in SWRL Kindergarten Study as a function of number of instructional units completed, Title I Eligibility, and demographic background. Except at upper levels of program, performance depends on units completed, not on background.

transformational activity" of applying previous experiences to the present situation. These findings might lead to the assignment of students to programs on the basis of ability. But the problem is more complex than this simple solution implies. In fact, we suspect that assigning students to a variety of programs by a variety of assignment rules is once again the best answer.

The research literature on assignment of students to programs is quite extensive, and certain facts are fairly well known (Duke, 1979; esp. for a review, cf. Calfee & Brown, 1979). For instance, when low-performance students are tracked or grouped together, tne performance of the entire group suffers. It appears that low-performance students tend to be assigned to low-ability teachers, which may account for part of the deficiency mentioned above. However, fellow students also comprise part of "the program," and we suspect that the overall context contributes to the phenomenon (cf. the earlier discussion of steering groups).

A second finding that appears fairly solid is that when students are heterogeneously grouped (i.e., when students from a variety of ability levels and status categories are assigned to each school and class), the higher performance students generally continue to excel, whereas the achievement of the lower-entry students is enhanced. This result, appearing in one form or another, has been the basis for a number of controversial policy decisions regarding the manner in which public schools are run in the United States. For instance, busing to obtain racial integration was based in part on the finding of Coleman et al. (1966) of relatively higher achievement of (lower-income) black students in racially integrated classrooms. Mainstreaming was mandated by U.S. Public Law 94-142 because citizens and legislators became convinced that handicapped students would receive a more adequate education when they could be included in the variety of experiences available in the regular classroom. That instruction should be provided in the "least restrictive educational environment" was a clear pronouncement about the perceived importance of diversity in the instructional program, and in the peers who are an important part of the educational environment.

Tracking continues to be carried out as an instructional strategy, especially at the secondary level. On the one hand is tracking at the school level, common in many foreign countries, in which the student is assigned to one or another secondary school (vocational or college-bound) on the basis of achievement or examination scores at the end of elementary school. A middle-of-the-road approach is to assign all students in the same neighborhood to a single comprehensive high school, and then to track within the school to different programs. This procedure at least permits students on different tracks to share some common experiences in classes like physical education, hygiene, and so on. At the other extreme is the comprehensive high school with a single program, where students are assigned more or less at random to classes. We doubt that such a program is really workable, even in communities where the population is quite homogeneous.

In principle, it is hard to argue with the ideal of school and classroom heterogeneity. Our country upholds the belief that all men are created equal, and opportunities to interact with others would seem vitally important experiences if we are to understand and respect the variety of people who comprise "all men" in our society. It also seems reasonable that the public school should assume a major responsibility in providing such experiences. However, the school also has other responsibilities, and achieving these aims is not always compatible with the goal of diversity in instructional experiences. Public education has limited financial and human resources, and these are not sufficient to achieve all the goals that we might judge to be worthwhile.

It is worth emphasizing the point that the integration of students (and teachers) from diverse backgrounds--for this is what we are talking about--is achieved only at some cost. When teachers compare the task of instruction under homogeneous and heterogeneous grouping, their response is consistent and strong--teaching a group of students becomes more difficult as the range of ability becomes wider. The reasons for the greater work load are fairly obvious. With a restricted range of ability and interests, the teacher can plan a single program of instruction that will fit most students. Diverse students require diverse programs. The additional planning entails more work, but an even greater problem is that most teachers have not received training in the implementation of multiple programs. We continue to mandate significant changes in public schooling (e.g., busing for integration, mainstreaming, heterogeneous grouping, and so on) with little attention to the implications of such programs for the teacher's task. When staff development components are included in such mandates, it is generally too little too late. A common model for inservice education is the entrepreneurial "expert" who comes for an afternoon, presents a ready-made package of answers, and departs with the fee. The answers may not fit the real questions at a given site. The training is generally a lecture format outside of the classroom. The follow-up is nonexistent. This model seems predestined to fail. It is as though commercial airlines when they changed from propeller-driven to jet aircraft had provided the pilots with a brief handbook and one trial flight--we would have expected a substantial number of wrecks.

Students, community, and school administration also receive little if any preparation for the changes described above. Many of the changes have lacked local community support, and have been received by the school administration as mandates "from on high," given under court pressure or threat of financial penalty. The result in many instances appears to have endangered the public school. The goals behind such moves are generally noble and worthwhile--and evidence often suggests that under appropriate circumstances the results can be positive. Our recommendation is that, in the future, more attention be given to training for the participants, especially teachers and principals, and to the evaluation of alternative implementation procedures in relatively small, well-controlled experimental settings. Busing to achieve racial integration was implemented on the basis of virtually no experimental evidence as to its effects, and it continues to be mandated as a political act rather than an educational program.

We have spent considerable space discussing the assignment of students to programs on the basis of general performance level, because this matter seems to us the most significant question facing American schools at present. A number of other issues fall under this rubric. We will mention them only briefly, because it seems to us that the evidence is not solid enough to make recommendations.

One issue centers on the various cognitive-style typologies. Students who are reflective, field independent, or categorical thinkers are presumed to flourish in a different educational environment than do impulsive, field dependent, or concrete thinkers. A frequently occurring notion here is that one should aim for a match between the child's style and the style of the program. This idea was included as a mandate under the Office of Civil Rights "Lau remedies" (1974; also cf. SEDL, 1976). Thus an impulsive student should presumably do better with a fast-paced program and an impulsive teacher, and so on. The literature also contains some suggestions that cognitive style is a function of ethnic status, but the results are neither substantial nor consistent (cf. Harrington's discussion in this series of the work of Ramírez & Castañeda, 1974; and Ramírez, Castañeda, & Herold, 1974; the counter-interpretation of Ogbu, 1974; also cf. the work of DeAvila (Note 6); and papers by Bissell, by Lesser, and by Kogan in Lesser, 1971). As noted earlier, the research does not support the use of these traits as a basis for assigning students, certainly not for permanent placements.

In the same general vein are the suggestions that some students (e.g., boys) are visual learners, whereas others (e.g., girls) are auditory learners, and that alternative instructional programs are needed for these different sensory preferences. The literature on sex differentiation does reveal consistent distinctions in the sensory-motor functions of males and females; however, these distinctins are generally at a fairly low level of cognitive processing, and would not appear to be a firm basis for decisions about the assignment of students.

Finally, we can mention efforts to assign students to instructional programs on the basis of language or dialect. At one extreme are students who neither speak nor understand the language of the classroom; for these students, the remedies provided under the Lau decision seem quite reasonable. In another corner are those bilingual programs that seek maintenance of a second language by the school on behalf of students whose cultural heritage includes a language other than English. The problem is not always that the child's English is insufficient for him or her to derive benefit from instruction in English, but rather that an important goal of American public education should be the preservation of cultures, and the development of respect for the variety of cultures in our country. Finally, in yet another corner are those who have hypothesized that a mismatch between the student's dialect and the dialect of the classroom may hinder learning. This point of view has centered largely on the dialects spoken by lower-income Blacks, but would seem to cover a wide variety of situations.

We cannot hope to do justice to this complex web of issues. The first problem is to identify the child's language competence and readiness to benefit from instruction in particular classrooms. We are still some way from practical solutions. A second problem is the identification, modification, and construction of suitable curriculum programs in those languages and at those levels of instruction where needs exist. A third problem is the training of teachers who can implement these programs. There is movement along all these fronts--in research, in development, in implementation, and in action (cf. the recent Ann Arbor court decision to the effect that teachers must be able to instruct students whose language includes Black dialect). In the instance of both bilingual and bidialectal instructional programs, one is hard-pressed today to find evidence of benefit to the students in this country for whom the special programs are designed (AIR, 1978). This "negative" evidence should not necessarily be given great credence; the programs were often identified by label with no monitoring of implementation, and the outcome measures (typically standardized achievement tests) frequently bear little relationship to the goals of the program.

All of these cases described above are based on the same basic assignment strategy--children vary in the instructional conditions that yield to fastest and easiest learning (of the instructional objectives), and the teacher (or principal) should provide an instructional program for each student that is suited to his strengths and avoids his weaknesses. Learning is easiest for most of us when it is concrete, part of a real social and physical context, and when we have readily available models and opportunities to learn by doing. The description by Harrington (Chapter 6) of learning among the Tale tribe fits this design, and it sounds delightful. Unfortunately, and for better or worse, these conditions are not always the best design for adaptation to modern society, where the demands often call for adjustment that is abstract, out of context, without models--and you have only one chance (Inkeles & Smith, 1974; for a specific and detailed instance of this principle at work, cf. Olson 1977a, b, on the relationship between spoken and written communication).

Over and above the question of whether the instructional strategy described is possible or economically feasible, one can also ask whether it is good for students. An alternative policy sees the school as an environment in which the student is continuously challenged, where the student is taught to his weakness and is left to develop strengths on his own. The teacher cannot teach everything, and the eventual goal of instruction is that what is learned must be transferred to new situations. Instruction fitting this policy requires more of the student and probably more of the teacher. We are inclined to think that the policy is consistent with Harrington's (Chapter 6) portrayal of the "competent" person.

In the limit, education as challenge might serve to perpetuate the school as a selection mechanism, an institution for picking out and certifying those students whose innate characteristics and background prepare them to benefit from schooling as a challenge. Another instance of this approach would place a greater accountability on the school, giving it the responsibility to ensure that all but a small proportion of students learn to meet the challenge of school—and of life after school. This point of view fits the role of the school expressed by Biggs (1978):

> . . . School . . . is a cultural invention, the purpose of which is to help children learn those important things about our culture which they would not otherwise pick up, and the learning of which has had little chance at being facilitated or prepared in our biological wiring [or in the student's environmental background, we might add]. (p. 13)

The success of the school in attaining such ends will in any event depend largely on the skill of the individual teacher in managing the classroom to accomodate the diversity that exists--the topic to which we turn next.

Classroom management. The teacher generally has little choice today about students or curriculum program. Nowadays, with declining enrollments and tax limitations, you take a job where you can find it, you follow the mandated curriculum and use the available materials, and you do what you can with what you have. The teacher's task is to achieve efficient and, it is hoped, effective management with limited resources.

The critical nature of classroom management for effective teaching is apparent in the outcome of several studies (Crawford & Gage, 1977; Stallings, 1975; also cf. Duke, 1979). The newest theme song even has a managerial ring to it--time on task. In the well-run classroom, each student spends a high proportion of time in engaged academic work. In a chapter on diversity, it is relevant to suggest that what the student is working on also matters, even though most of the research has not yet attained this degree of sophistication.

We can mention a few things about management, over and above the concept of time on task, that bear directly on provision for diversity. Some of these are supported by research; others are practical suggestions that we think bear repeating.

First, we do know about the kinds of differences that are most significant in determining student success and style. Entry level ability and intelligence are at the top of the list, to be sure. In addition, the kinds of dimensions identified by Shipman and Shipman (Chapter 12) and Thomas (Chapter 11) should be part of the teacher's typology, not to serve as new labels but as a starting point for the understanding of the student's cognitive processes. We think it is important for the teacher to know about the underlying mental and motivational characteristics that lead to categories like Thomas' "the Easy Child, the Difficult Child, and the Slow-to-Warm-up Child." The various dimensions are not totally independent, but the teacher can expect to find all combinations. By no means rare is the report (Education Daily, 1979) of a fifth-grader tested and found to be intellectually gifted, found to be in need of "a challenge," with the warning that "unless some special arrangement is made for him, he may easily become a behavior problem." No such arrangements were made, he did display behavior problems, and the parents have filed a million-dollar law suit against the schools for failing to meet the student's needs. Individual teachers face this problem in less spectacular form every year.

Educational psychology texts provide remarkably little guidance on the nature of individual diversity, or how to provide suitable arrangements in the classroom. Some provide no advice at all; others appear to reinforce stereotypes (e.g., in one popular text, the section on individual differences discusses "exceptional children" in the context of "suggestions for maintaining classroom control"), whereas the most typical treatment is to sprinkle advice and research findings throughout, with the result that the teacher may well give up any serious effort at handling diversity (e.g., Gage & Berliner, 1975):

> . . . No one method, no one text, no one curriculum, no one version of any teaching-learning activity is likely to be equally successful with all students. The wide variety of variables on which people differ interacts with the methods we use to teach students. The thoughtful teacher should never lose sight of the need to monitor and then match students to treatments in some fashion that best fits the student.
>
> . . . Too little is known as yet to make possible the widespread design of educational programs based on ATI information.

> In the meantime, teachers need to understand the definition, measurement, and organization of intelligence and related dimensions of individual differences, such as motivation. These are the important general dimensions on which individual differences are used for predicting student achievement and assigning students to treatments. (p. 188)

The papers in this book suggest that we are currently able to give more precise and helpful advice than this.

Finally, we propose that one of the chief tasks of the teacher as manager is to search for additional resources. Classes of two to three dozen children are typical in the United States, far smaller than in many other countries. Class size does appear to matter in achievement, but only when the number of students drops below a dozen, and we are not likely to double the expenditures for public schooling in this country, at least not in the near future. Meanwhile, even the hardest working teacher is pressed to handle the full range of individual needs in a large class.

Where are additional resources to be found? Technology is one answer. More effective classrooms are generally found to contain a greater variety of materials, including books (one of the oldest technologies), games, tape recorders, and so on. Some of these devices are expensive, and all require time and planning effort for effective use, but they allow a wider range of instructional alternatives.

Peers and cross-age tutors are another answer. Here again, simply "importing" other students and mixing them up is not likely to do much beyond creating chaos. Planning and managing a tutoring program is a demanding job, and the rewards may be a while in coming. The evidence is that there is a payoff, especially for the tutor (Ellson, 1976).

Parents can also be resources. Parents and teachers share a common concern with the child's development and well-being, and should work together as partners. Unfortunately, as Lightfoot (Note 1) observes, the relationship is often one of distantiation, mistrust, or competition, with neither party comfortable at interchange with the other. However, cooperation is possible, and it is generally to the teacher's advantage to foster a more participative role for parents (and other members of the community) in the classroom. Aside from alleviating the class-size problem, these other adults can also provide greater diversity of experience in the school. Parent volunteers are less common in secondary schools for some reason, but the concept would seem to hold promise there as well as at the elementary level. We realize that such activities are not always possible, and are often inconvenient. In our experience, for what that is worth, they seem to pay off. Once again, the costs of implementing such programs is not trivial.

The research needs. Most of "what we know" is based on short-term research of limited generalizability carried out from a single disciplinary perspective. These shortcomings reflect in part the traditions of educational research, but they also result from federal and state policies for the support of educational research and evaluation efforts. We will not attempt a comprehensive critique, but instead touch on a few problems that seem especially noteworthy, and we would hope for progress to alleviate these problems.

Cronbach (1957) noted many years ago the separation of experimental psychology from research on individual differences, and the trend continues today. "Basic" research in the behavioral sciences is highly analytic, and we have sophisticated descriptions of human thought processes--but there is a virtual neglect of the differences between people in how they think (for two exceptions, cf. the work of Sternberg, 1977, as well as Carroll, Note 3, and Hunt et al., 1973, 1975, mentioned previously). Applied research, on the other hand, has tended to be nonanalytic and stereotypical--evaluation studies tend to classify people as rich or poor, black or white, Anglo or Chicano, labels that are at worst misleading and at best still fail to illuminate underlying functional differences. Programs continue to be described in simplistic terms. We are past the experimental-control level of distinction, but even in a fairly respectable design such as Planned Variation in Follow Through, the treatment factor focuses more on labels than on functional variations.

Snow (1977), Barker (1978), and Grannis (Chapter 13) are among those who have called for research designs that are more comprehensive and generalizable. Grannis also raises this issue, making reference to Bronfenbrenner (1976) and Willems (1977). Cronbach's (Cronbach, Gleser, Nanda, & Rajaratnam, 1972) concept of generalizability has redefined our notions of the reliability of a test. The performance of a single person on a single question is actually an event in a multidimensional contextual space. The generalizability of this single event is the measure of its stability over contextual variations. In like manner we can imagine a research investigation as a single event, carried out by a particular researcher in a particular context. The generalizability of the study is the stability of the finding over the range of relevant contexts (Calfee, Note 10). Generalizability is primarily a matter of design. One approach to generalizability design is to sample at random from the set of texts, with the hope that adequate control and representativeness will be achieved. This is the approach taken in building a standardized achievement test or compiling a test battery; it is also one way of viewing the procedure of meta-analysis. Another approach is to construct more systematic designs that ensure more adequate control and a higher degree of orthogonality between the factors. This approach has demonstratable advantages in the evaluation of tests, and we suspect for social science surveys and experiments as well (cf. Calfee, Note 10, for technical recommendations).

Finally, we want to mention again the critical role of the "dependent measure" in research. The total score on a standardized achievement test is still the most common measure we have to assess student response to schooling. This measure is suitable for certain purposes. It is highly reliable, and has substantial predictive validity for a variety of other performance measures. It shows little signs of the bias that is due to status characteristics--in fact, it is influenced by virtually nothing except entry level and years of schooling.

Standardized achievement tests will continue to be used and to serve a multitude of purposes until other instruments come on the scene that yield different information suitable for different purposes. The innovative approaches now in vogue (e.g., criterion- or domain-referenced tests) have not demonstrated their distinctiveness. In appearance and procedure they cannot be distinguished from standardized tests, and student performance under different procedures is highly correlated.

We have our own ideas about the directions in which progress is likely to occur (Calfee & Drum, 1979; Calfee, Spector, & Piontkowski, in press). We think that a theoretical foundation is essential and that the assessment of reliable profiles of performance is likely to yield distinctive indices that depart considerably from the omnibus measure of overall performance. This approach allows us to put person-variance and person-treatment-variance into the same category, solving some of the problems discussed by Grannis (Chapter 13, pp. 13.54 ff.). Incidentally, our stress on the importance of patterns or profiles is supported by Tyler (1978). She noted that the factor analytic tradition has produced only limited results in the search for distinctive components in intellectual and educational performance (pp. 81-84), but pointed to the potential importance of the patterns in the work of Escalona (1968):

> Probably [Escolona's] most important finding was that, while the specific behavioral assessments on which the SPE [stable pattern of experience] ratings were made did not correlate individually with developmental status, the SPE patterns did. It was the right combinations of factors rather than the right factors themselves that mattered. In concrete terms, Grace, who was the subject to strong stimulation from both without and within and who received a great deal of care and attention from her active, sociable mother and the other members of her family, was

> accelerated in her overall development. But so was Robert, who was not very reactive to inner stimulation but much more reactive to external stimulation and who was enthusiastically although rather unskillfully handled by his inexperienced mother. Different combinations of personal characteristics and treatment seemed to work well in different cases. (pp. 66-67)

The distinction between unidimensional scores versus profile scores is an important one for understanding diversity, in my opinion, and so it seems worthwhile to add a few technical remarks to the preceding discussion. From one perspective, the issue is a restatement of the contrast made by Spearman (1927) between general and specific facets of human ability (also, cf. Cronbach 1970, pp. 197-454). By and large the general or "g" factor won the day. Specific factors turned out to account for only a small proportion of the variance in performance; the differences were unreliable and unstable. Clinicians might use profile information in extreme cases (e.g., if the Verbal and Performance scales of the Wechsler Intelligence Scales for Children or for Adults, 1949, differ greatly, Cronbach, 1970, pp. 238 ff., encouraged the tester to take the difference into account). Standardized achievement tests might assign distinctive labels to subtests in a battery. However, given high inter-test correlations and normally distributed scores, there is little likelihood of detecting reliable differences in performance between subtests (Thorndike, 1973).

I believe there are three reasons for the failure of present day tests of ability and school achievement tests to yield more than one piece of information: (a) lack of systematic, comprehensive design, (b) methods of analysis that optimize information about a single dimension, and (c) a decision to assess "basic mental processes," rather than to focus on "acquired" skills and knowledge. Let me say a few words about each of these matters.

First, by design we mean the identification of relevant factors, both substantive and contextual, that are likely to influence the individual's performance. Since cognitive style is frequently discussed in this series, we will use it to illustrate design. The most common instrument for assessing the reflectivity-impulsivity dimension of style is the Matching Familiar Figures (MFF) test (Kagan, 1965). The student looks at a target drawing, and then must pick out the identical drawing from a set of similar alternatives. The drawings are all presumably "familiar." What design factors might be relevant to this test? Several come immediately to mind: the distinctiveness of the nonidentical alternatives, the simplicity/complexity of the figures, the number of alternatives, the instructions (emphasizing speed versus accuracy greatly affects performance), the availability of feedback, and so on. Contextual factors might include variation in the test form (are all figures equally appropriate, or are some pictures idiosyncratically easy or hard?), the tester (it could well be that different testers call forth different responses), and the testing environment (calm and quiet versus noisy and frantic). The proposal for a test design is quite a departure from current practice, where factors are limited to subtest labels, alternative forms, and a general progression over items from easy to hard. However, we think in the absence of such control that it will continue to be difficult if not impossible to detect reliable profiles.

The second point focuses on analysis. At present, statistical analysis of tests emphasizes the reliability of the total test score for the individual. Practically, this emphasis means that there must be considerable dispersion in the total test scores of individuals, and that each item in the test must contribute in a consistent fashion to the individual's total test score. Items not meeting this criterion are discarded during the tryout of most typical tests. As we have argued elsewhere (Calfee & Drum, 1979), the effect of this choice of analysis is to ensure that the test has a unidimensional character, and that tests will converge on that trait that is most strongly represented in the original set of items. We are not sure that the trait is common to most existing tests--the correlational evidence suggests that widespread convergence has been achieved, for better or worse. We suspect that the trait is some sort of socialization to schooling and to the group-administered, multiple-choice method of assessing response to schooling. Alternate methods of analysis would stress the examination of difference or contrast scores, and would optimize the reliability of such scores. These methods do not require new theory or new procedures; the well-known methods of psychometry will suffice. What is needed is a reshaping of our concepts concerning the nature of the information we should seek about the individual.

The third point also centers upon what to measure, but where we stressed a methodological "what" in the paragraph above, here we stress a substantive "what." Tests of intellectual and educational ability generally aim to measure the individual's "real" skill and knowledge--to get at the basic mental processes. The superficial, "acquired" facets of performance are de-emphasized. It is not important that Jane's father is a computer engineer, who, since she was five, has sat with Jane on his lap at the computer terminal in their home, turning her into a "math freak." The question is, does Jane have an aptitude for handling numerical concepts? Ms. Lee has spent the school year teaching her third-graders the principles of differential calculus, building on their interest in space travel. The question is, can the children produce the correct answers on an achievement test based on the aggregated "curriculum objectives of the State of California for third-grade mathematics?"

The point is that tests should measure only what the individual is taught. To be sure, teachers for their own sakes are well advised to carry out such assessments. The point is that tests are likely to be more informative if they are designed to measure the indirect or transfer effects of what individuals have the opportunity to learn. To meet this criterion, test constructors would have to give more attention to the substance and style of the curriculum of school, home, and neighborhood, and would have to validate their instruments against actual opportunity to learn, rather than computing the correlation with performance on some other similar test.

Reliability, variances, designs, and transfer validation may seem pale and abstract shadows of the qualitative richnesses of human diversity--and in some respects they are. However, these statistical indicators can serve as important and efficient summaries of certain features of diversity. The problem with presently available techniques is their unidimensionality and their lack of substantive reference and validation. Instrument design and analysis that focuses on the measurement of patterns, of profiles, of configurations, of skill and knowledge--this is the direction that is more likely to capture the qualitative differences between individuals that should inform and guide instructional programs.

Section VI. Diversity, Decision-making, and Equity

Where do we go from here? The framework we have proposed for considering diversity is broad and comprehensive, and a bit overwhelming. Within that framework, much is known but much remains to be learned. I see some clear ways in which the task of research on diversity might be divided up. I can also see that much of the available research has been conceived and conducted from very limited perspectives, such that disciplinary boundaries have often determined the outcomes as much as the substance of the problems.

In this last section, I do not intend to bring together all the threads of the preceding sections--the time is not right for that. Nor do I intend to propose a comprehensive program of research on human diversity in instructional settings--that is a tempting challenge but time is too short, resources too scarce, and the mandate too broad. Rather I want to consider briefly the notion that the definition and handling of diversity in the school depends upon various decision makers in the society.

Differences--between people and between programs--are fundamentally matters of decision making. Any two objects or events in the world are likely to differ in some way. Some variations are perceived as important, and others are not. Some call forth action, and others do not. It is the human observer who decides whether a difference makes a difference.

If the instructional system--clients, agents, and goals--were perceived as uniform (i.e., if there were no diversity), then it might be possible to arrive at a single optimum set of decisions about how to operate the system. But diversity does exist, at all levels of the system, and varying with time. Therefore, decision making under uncertainty and with differing values is a major task for all participants--policy-makers, to be sure, but also superintendents, principals, teachers, students, and parents. Decisions are now often made on the basis of the urgings of the heart to the exclusion of the reasoning of the mind. Both are necessary (cf. Keeney & Raiffa, 1976, for a provocative and detailed discussion of decision making when values, preferences, and costs must all be taken into account).

In this section I want to consider decision making in two arenas, which may serve to illustrate the problems I have in mind. The first example is fairly concrete and contemporary--how to set minimum standards for graduation? The second is broad and two centuries old--how shall the nation define equal educational opportunity? I do not intend a deep or comprehensive treatment of either topic. The aim is to open the way for discussion in a broader forum of the impact on diversity of decisions and assumptions by various segments of the society.

Minimum standards for graduation. One of the more exquisite contradictions to confront the nation may be appearing in the guise of the minimum performance standard test, now being widely adopted as a criterion for the receipt of a high school diploma. The concept seems simple enough. Schools prepare students for their lives as adults. Life in our society makes certain minimum demands, and certainly the schools should be accountable for preparing students to handle these minima. Therefore, the student should demonstrate competence in these areas, at some standard close to mastery. Practically speaking, this demonstration must take the form of performance on a group test. The general aim is to make the diploma more meaningful, and also to render the schools more accountable.

On the surface, the argument seems quite reasonable, and more than half the schools in the country have decided to implement some form of proficiency standards. The details vary. In some instances the standards are set for all schools in the state. In other instances, decisions are made by the local district. Sometimes the emphasis is on "life skills"; at other times the test is linked to the curriculum of the school.

In my opinion, the concept is fraught with problems on rational analysis. First, not all citizens (students and parents) want and need the same things from schooling. Nor do these people want and need the same things after they complete schooling. Some people want to become firemen, while others want to become beauticians or ski bums; some want to join the Teamsters Union and drive a truck, while others want to go to a university and become a lawyer or a teacher. The minimum competencies for these lives vary considerably, and it is by no means clear that there is much overlap.

Happily, public schools have been reasonably sensitive to this diversity in goals. By the time students complete high school, they may be ready to go in any of several directions, depending on whether they have gone through a preacademic program, a vocational strand, a remedial class, or work experience, or whether they have dropped out. These strands are valued differentially by various groups in the society, and the individual's standing in the society, occupational chances, and income level are all related to the strand he or she has passed through--the predictive relations are complex, and as for any status label the predictions are far from perfect. Nor is the system without flaw. Among the possible inequities is the strong suspicion that students from lower entry levels may be systematically counseled against striving to enter those strands that are "reserved" for higher status individuals (Alexander, Cook, & McDill, 1977; Alexander & McDill, 1976; Gottfredson, 1978).

Nonetheless, there is clearly a diversity of school programs, not altogether inappropriate to the diversity of goals. Minimum competency tests as presently implemented may affect this system in two ways. First, by deciding on a single criterion of certification for both student and school, they may tend to evoke a single uniform curriculum for all students who must pass a particular test. Second, they may introduce (perhaps to an extent unknown up until now) a systematic bias into the certification process that leads to the diploma. As long as schools have provided a variety of programs, students have had a variety of educational opportunities for learning a variety of skills and knowledge. The secondary school counsels the student about the program that is best suited to his needs, goals, and abilities, so the school is partly responsible for what the student has an opportunity to learn. The minimum standards test, being a finite instrument, is certain to measure the learning outcomes of some programs "better" than other programs--"better" may mean more reliability, more appropriately, with more items, and so on. For instance, my impression is that the "functional skills" that comprise the content of some of these tests is closer to the instruction in remedial programs than to the instruction in preacademic programs. If so, then it would appear that the test is systematically biased against the instructional program provided to college-bound seniors, and to some extent these students have less of a chance to receive a diploma than if they had been counseled to take a remedial program. I am not greatly worried that many of these students will fail graduation tests. The point is that the test may be unfair to these students--it measures neither what they are learning in school nor what they need in order to succeed in their lives. One can add to the absurdity--the majority in any community is certain to set the standards for what is "minimum," which ensures a different sort of interpretation for the principle that "the majority rules." Unless the student can meet the criteria imposed by the majority, a diploma is denied. And if the majority sets too low a standard, then the elite, expecting too little from the school, are likely to withdraw support. The problem here, in my opinion, is a set of legislative and bureaucratic decisions that ignore the diversity in public school programs, and in the clients of those programs. Declining SAT scores, increasing distrust in public institutions--whatever the causes, the minimum standards movement strikes me as a "rush to judgment" that is likely to sterilize public educational programs by reducing them to the lowest common denominator.

Equity. Equal educational opportunity remains a frustratingly elusive concept (e.g., Kopan & Walberg, 1974; Gordon, 1976). Perhaps it should mean equivalent resources to be allocated to every student--the Serrano-Priest decision and federal compensatory legislation are the two sides of this coin. Perhaps it should mean to each student according to his or her need, something that would bother only a few of us, except for the problem of determining need "for what." Perhaps it should mean that all students depart the schools exactly identical in their intellectual accomplishments and (perhaps) potential--but we have serious doubt about whether such a goal is either durable or feasible. Perhaps, given the inequities of a competitive, elitist, and meritocratic society, the principle of equal educational opportunity is but a salve to soothe the bourgeoisie--and perhaps our political preferences would put the slow change evoked by an inefficient system of schooling ahead of the more radical alternatives.

In any of these cases, equity is not a given, but is a principle decided upon by various actors in the society, which guides our actions in the schools in a more or less clear and understandable manner. As long as the concept remains elusive or takes the form of a "simple answer to a simple question," the principle will not guide and our steps will be uncertain.

As Burbules and Sherman (1979) noted:

> . . . while [equal educational opportunity] "states an ideal" and "motivates action," it is inadequate by itself to guarantee a just distribution of educational benefits. . . . Given alternative definitions of "education," and given certain other social goals or ideals, the principle of e.e.o. could be used to create or perpetuate an enormously broad range of social and educational outcomes. . . . (p. 10)

The strength of the principle comes only as additional criteria are introduced to constrain the definition and goals of the general principle. It is partly in this context that I opposed in the preceding section the current implementation of minimum performance standards. Certainly success on these instruments is not the aim of equal educational opportunity! Children enter the world with different talents. Family and neighbors engender different environments during the early years. Schools provide differing instructional programs. Graduates differ in their life goals.

For the school, I think the challenge is to ensure equity in the quality and appropriateness of instructional support for the student, toward whatever goal he or she decides on or is encouraged to pursue. In addition, I expect the school to promote respect for and appreciation of the differences in goals. This expectation means that the school must instill a respect for quality and competence in all areas of life. I think that few of the people charged with the conduct of the public school in the United States would disagree with these broad aims. Such concurrence, if indeed it exists, speaks not to the triviality of the goals, but to their enduring quality as fundamental principles of our educational system.

Somehow, we seem to have become sidetracked in our move toward these aims. Decision makers at federal and state levels initiate projects designed to achieve quality programs for all children. These projects are seldom guided by trustworthy research, and the programs are not working as well as we want them to. The remedy to this problem is not simple. To spell out the details of the research program needed to support present efforts to accomodate diversity is too big a job to undertake here. From my point of view, the guiding principles are those that I have listed before: (a) research must become an integral part of program planning and implementation, as well as looking at outcomes; (b) research must be of adequate comprehensiveness and duration to measure the range of sigificant variables; and (c) research must be based on the most robust techniques of theory, design, and analysis if we are to encompass the complexities of the system being studied. We have the know-how and the tools to gain a fuller understanding of the meaning of educational variation. What is lacking is a mandate and resources.

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CHAPTER 15

Human Diversity and Pedagogy

Edmund W. Gordon and Georgia Nigro

Probably the most critical social, theoretical, and technological questions for education grow out of the problems posed by the need to beat the odds against effective educational development in learners for whom the predictions are justifiably negative. In fact, it can be argued that if pedagogy makes a difference in the intellectual development of persons, then the achievement estimates based on any current assessment should be exceeded as the result of the application of appropriate and sufficient learning experiences. Thus, if our social investments in education are to be justified, it must be on the basis of the demonstrated capacity of pedagogy to change the current predictive validity of status characteristics, particularly for academic and related intellective achievements. The traditional positional relationship between pupil school entry characteristics and pupil school exit characteristics makes it difficult to justify schooling as a democratizing force in a society where it can be argued that the most pervasive source of diversity in human populations is to be found in the distribution of wealth as reflected in available resources and power (Calfee, Chapter 14). Since the inequitable distribution of resources and power is associated with unequal life chances, including chances for educational development, it is an insufficient justification of schooling that its impact tends to maintain such positional relationships. Of course, it can be argued that without schooling the intellectual achievement gaps between high and low status groups would be further exacerbated. None the less, if it is the purpose of instruction that pupils learn, then learning should be associated with the goodness of instructional fit between learner and learning experience rather than goodness of fit between pupil school entry characteristics and pupil school exit characteristics. The problems posed by differential characteristics in pupils present us, then, not only with the socio-political problems of making educational opportunity and achievement more equitable, but also with the pedagogical problems of insuring

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instruction/learner fit in the achievement of effective education. It is with a focus on these two categories of problems that the work reported here has been pursued.

Given the long history of concern with group and individual differences--Anastasi (1964) traces such concern back at least as far as Plato and Aristotle--it may seem unusual that we have devoted so much attention to several specific dimensions of human diversity. As indicated in the introduction to this report, our efforts stem in part from the fact that contemporary research and practice have in varying degrees taken these differences as granted, treated them superficially, or viewed them from the narrow perspective of the particular indicators with which they have been associated and by which they have been measured. Our efforts have also been stimulated by the very strong traditional tendency to pay lip service to group and individual differences while continuing the domination of education and developmental facilitation by group techniques and nomothetic principles. Even when more detailed attention has been given to aspects of human diversity (Anastasi, 1964; Bassett & Watts, 1978; Bloom, 1976; Cronbach & Snow, 1977; Davies & Flaherty, 1976; Messick, 1976; Osborne, Noble, & Weyl, 1978; Westman, 1973), the tendency has been to treat traits descriptively, to focus on methodological problems in the study of human variation and its interaction with treatments, and in a few instances to explore possible implications for education. The sizeable body of work available covers differences in physique, age, sex, social class, ethnicity, culture, cognitive style, temperament, intelligence, environment, language, motive, motivation, self-concept, values, aspiration, and still others. There is also work developing quite apart from these trait-dominated investigations that is concerned with individual differences in cognitive function as opposed to style. In this work the concern is with problem-solving strategies, cognitive factors, information-processing techniques, composite cognitive tasks, and information-processing components (Sternberg, 1979). Together these works form an impressive body of knowledge, but they are not as yet very useful in informing pedagogical design.

A major emphasis in the work reported here has been placed on possible implications for education. In choosing several aspects of human diversity, the availability of bodies of knowledge and interested authors has had its influence. All possible manifestations of human diversity are not represented, but several of the most important attributes are addressed. Included are social economic status, sex and gender, ethnicity, culture, language, motivation, identity, health and nutrition, affective response tendency, cognitive style, and environments. Summaries of the authors' treatments of these manifestations of human diversity follow.[1]

Social Economic Status (Class) as a Manifestation of Human Diversity

Bond begins his discussion of socioeconomic status with a review of the theories and concepts that form the underpinnings of the debates about class and educational achievement. The Marxist position of class as emergent is presented. Bond argues that empirical sociologists concerned with the relationship between class and educational achievement do not countenance this notion of class; they assume class and thus negate the dialectical perspective of historical process. Weber's notions of class are presented in the context of his "action theory," an orientation in which the individual is seen as an active agent. Later social scientists have extended Weber's scheme through an elaboration of the concepts of status and role. To Durkheim, for instance, society was primary, and one of its principal institutions for socializing the individual was education.

Socioeconomic status has generally been assumed to have a bearing on a number of areas of academic achievement. Considerable controversy exists, however, over the reasons for the correlation. Bond presents four broad categories of explanations for the socioeconomic status/academic achievement correlation. The first category of explanations posits the genetic inferiority of intellective potential in lower socioeconomic groups as the source of the correlation. Social mobility is viewed as open to anyone with the requisite talents. According to the argument, lower status simply reflects this inferiority. Opponents of this position argue that it is almost impossible to determine the relative shares of environment and heredity in a multiply determined trait like intelligence.

A second set of explanations looks at the effects on their school performance of the cultural environments of children from various socioeconomic groups. This set of explanations includes the "culture of poverty" argument, which has been criticized for leading to the formation of a caricature of working-class life. This argument also places the responsibility for the failures of schooling on the families of the victims of school wastage.

The third set of explanations for the correlation contains the argument that lower-class children receive inferior treatment from the educational establishment. In a variation of this explanation, Ogbu has argued that black children perceive the unequal opportunities imposed upon their advancement in the employment realm despite equal effort; accordingly, they will fail to develop equal competitive skills.

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[1] References included in these summaries can be found in the reference lists of the individual chapters of this book.

The fourth set of explanations for the correlation is often seen as subsuming the third set. According to these, the educational system simply functions to maintain class differences, since the school cannot break those social class positions unless society does so first. According to this view, no amount of educational intervention short of rearranging the economic structure of society can help lower-class children to any significant degree.

Bond points out that the four explanations possess common drawbacks, the two most serious of which are their inability to explain individual successes or failures and their insensitivity to the complexity of factors determining educational achievement. He cites Lacey's Hightown Grammar (1970) as an example of a work that examines the many variables, including socioeconomic status, that determines individual educational success. It is probably this complexity and the insufficient attention given to its study that most limits our understanding of the relationship between socioeconomic status and educational achievement. Bond argues that this relationship has not been fully researched since different researchers have tended to concentrate on one aspect of the relationship to the exclusion of others. What does appear to be clear, however, is that the use of socioeconomic status as an indicator of the actual socialization experience of the learner can be greatly misleading, since such experiences vary within class groups. Thus educational planning based upon assumptions about prior socialization inferred from SES is likely to be inappropriate. If one accepts the view that class position is dynamic and emergent rather than static, then comparisons between groups assumed to share class in common become specious. Where class status can be assumed to be a vehicle of transmission, the attributes that are transmitted are not just influenced by the characteristics of the group; those characteristics must also be understood as being partly determined by the hierarchical division of labor resources and power in the society. In understanding the behavioral characteristics of groups and individuals, status may be important to the understanding of social expectation and social treatment, but it may well be that specific differential historical experience may provide the most appropriate basis for understanding the implications of the behavior for educational planning and management.

The Pedagogical Relevance of Sex Differentiation

In her chapter on the pedagogical relevance of sex differentiation, Bordier sets out to clarify sex differences, similarities, variations, and mutability. Legislation such as Title IX of the Education Amendments of 1972 makes this clarification a pressing concern. According to Bordier, Title IX, which prohibits bias in the allocation of educational opportunities to the two sexes, contains numerous as yet untested assumptions about sex differences. Bordier attempts to underscore these assumptions in her chapter.

She begins her discussion with a description of the genetic/biologic aspects of early sex differentiation in psychosexual, physical, motor, and cognitive development. She suggests that genetic/biologic factors are fairly variable among the members of a sex even where they contribute to sex-linked differences. Furthermore, sex-linked traits are not sex-exclusive. Bordier concludes that the differences that exist at early childhood appear too small to lend themselves to significantly differentiated patterns of development in the areas described unless reinforced and accentuated by sociocultural processes.

The school appears to be an arena in which the differences that exist at early childhood are reinforced and accentuated, and evolve into a pattern of increasing sex differentiation in behavior and achievement. For example, after puberty the overall academic achievement of females, previously superior to that of males, drops off, never to recover. Bordier argues that the observed pattern of increased differentiation is a result of both student-introduced phenomena in the school and the functioning of the school as an institution.

Under student-introduced phenomena, Bordier includes findings that boys and girls evaluate the two sexes differently, that they attribute more power to male than to female roles, and that same sex groups function with inquisitional perseverance within the classroom in enforcing traditional sex-role norms. The school as an institution, Bordier argues, exacerbates these differences in a variety of ways. Teachers, for example, possess sex-differentiated expectations about activity levels and allocate such resources as time and attention unevenly. The more common male-dominated authority structures of school administrations may bring a different role orientation to schools than female-dominated authority structures. Bordier concludes that we must view student sex-role development in the larger context of institutional stratification processes that assign students to specific statuses congruent with the stratification of the schools and the larger society.

The school's role, Bordier states, must be to weaken the influence of stereotyping factors that penetrate the classroom. The desirability and need to transcend traditional sex roles has been increasingly documented. Males and females who express the most satisfaction about their own mental health and who perform most effectively in everyday life tend to be those who integrate traditional masculine and feminine qualities into their roles. This integration gives them flexibility and assurance in dealing with diverse situations at home, at work, and in social life in general. Bordier suggests that schools will best meet this charge through consideration of group characteristic influences in conjunction with individual learner traits. The political pressure of certain groups for better treatment has been adequate for obtaining recognition and resources, but insufficient for modifying the patterns of access, utilization, and outcomes of schooling. A group-based, individualized program of instruction is needed, she concludes, to meet the political and pedagogical principles of equity.

Ethnicity as a Dimension of Human Diversity

Yeakey's chapter on ethnicity has two broad yet interrelated foci. The first examines the phenomenon of ethnicity on a macro-level, as a dimension of human diversity among the people of the United States. The second examines ethnicity on a micro-level, in terms of its role in the public school environ. The aim of this chapter is to achieve an understanding of ethnicity as an aspect of human diversity in the United States today. Ethnic group rivalry and conflict have been enduring, persistent, and pervasive phenomena throughout the history of the United States. The prominent issues in this struggle concern ethnic identity, assertiveness, self-interest, intergroup rivalry, conflict, power, societal norms, and institutional sanctions.

The scope of this chapter is confined to those ethnic groups in the United States that receive greater differential and pejorative treatment on the basis of their ethnic identity; namely, blacks, Puerto Ricans, American Indians, and Mexican Americans. A contemporary as well as comparative historical perspective is be provided in an attempt to understand the development of structures and processes that form the basis for racial and ethnic intergroup relations, since the contemporary patterns of inequality and differential power and prestige are rooted in systems of racial and ethnic intergroup relations initiated in the past.

Yeakey presents the concept of ethnicity as born out of the emerging functional realities of ethnic group identity. It conceptualizes a definitional shift in the referents for the term ethnic groups from minority and marginal subgroups on society's fringes to the major societal groupings that make up multiethnic soceities. The differential economic, political, and social treatments accorded racial and ethnic minority group members are the means by which the unequal status of the minority group and the disproportionate power of the majority group are preserved. Yeakey differentiates this discrimination into two types, attitudinal and institutional/systemic. These two manifestations of discrimination are interrelated and might be mutually reinforcing, but they are not mutually dependent for their existence. That is, if discrimination were eliminated at the individual level, it would not necessarily disappear at the institutional/systemic level and vice versa.

It is to the issues of discriminatory treatment and inferior status of ethnic minorities in the United States that major attention is given in this chapter. The author presents summary discussions of the major theoretical perspectives from which ethnic relations have been studied. In the Race-cyclic Framework, for instance, relationships between ethnic groups follow cyclic patterns that are repeated with each new group. However, the groups that are the focus of this chapter tend not to follow this model in their interactions with the majority groups in the United States. The Consensus Framework refers to a condition of stability of social systems in which there is an integration of the component groups to constitute a common value system as reflected in patterns of assimilation. The Interdependence Framework is a state of forced cooperation and accommodation among subgroups and subsystems, regardless of consensus or dissensus, in order that each may achieve a set of goals that they are incapable of achieving alone. The Conflict Framework is an umbrella-type frame of reference inclusive of several theoretical constructs that, although varied, posit the primacy of conflicts as a salient and pervasive condition. The framework accommodates such conceptions as split labor/market theory and class/caste theories.

Yeakey continues with an examination of concepts of prejudice and stereotyping and a historical review of these phenomena in the experiences of various ethnic groups in the United States. She concludes the chapter with a discussion of the role and function of schooling in United States society. Since role and function are viewed as restrictive of mobility and duplicative of the status quo for the underclass and caste-like groups, there is no discussion of the implications of ethnic differences for teaching and learning transactions. Despite this essentially negative but accurate analysis, from the author's perspective it can be argued that there are pedagogical implications that emanate from what is known concerning ethnicity. Some of the implications related to culture, identity, and social class also apply here. In addition, since ethnic identification is such a ubiquitous concern, its roles and functions in school organization and in learning cannot be ignored. Patterns of ethnic mix do seem to influence involvement in the tasks of schooling and the outcomes of such involvement. Ethnicity seems to influence teacher expectations as well as the aspirations and expectations of pupils. The fact of ethnic differences in the society and in the school demands some reflection of these differences in the curriculum and the staffing of the school. There are modeling and representational problems that flow from the fact of differential ethnic group participation. There are problems related to value awareness and the differential purposes of schooling. Although Yeakey would argue that the purposes of schooling in a capitalist and racist society cannot accommodate such concerns, we would be remiss in not calling attention to the fact that these issues not only require attention, but also can be at least partially addressed even in the schools as they currently exist.

Culture as a Manifestation of Human Diversity

In his chapter on the cultural aspects of diversity, Harrington defines culture as explicit or implicit patterns of and for behavior, acquired and transmitted by symbols. He makes a distinction between culture as a descriptive concept and culture as an explanatory concept. The distinction resembles Gordon's distinction between status and functional characteristics of learners. Harrington's goal is to discover when culture has sufficient explanatory power to be labeled a functional characteristic independent of other functional characteristics with which it is highly associated.

Harrington identifies three approaches to the relationship between culture and pedagogy. In the first approach, culture is primary and determines both the form and content of education. The second approach is that of culture as a status characteristic. In this orientation, the effect of a status label on others is investigated. The third approach addresses the functional characteristics of culture that are relevant to teaching and learning. The three approaches are not mutually exclusive.

Two hallmarks of anthropological approaches to education as a manifestation of culture are stressed. The first is breadth; anthropologists generally do not confuse education with the narrower concept of "schooling." Fortes' work on education among the Tallensi is free of this confusion. The second hallmark is the methodology that anthropologists bring to bear on the problems they investigate. This methodology includes a variety of techniques subsumed under the label "participant observation"; the anthropologist goes to the natural setting of a behavior and observes it *in situ*, with a view to understanding the mechanism, meanings, and functions of the behavior.

The unique character of anthropological approaches to education is not evident where the status aspect of culture is concerned. Harrington argues that except for cases where it is invoked to remedy the effects of past or present discrimination, culture as a status characteristic has no place in educational planning. Functional characteristics of culture, Harrington continues, reflect anthropology's unique methodological approach and are important to educational planners in any cross-cultural or multicultural setting. The conception of learning held by the Tale indians and the attitude toward harmony among the Navaho, for example, are aspects of culture that have critical functional implications for educators. In both instances the investigator is concerned to know how the behavior emerges or is acquired, what meanings it has for the group, and how it functions to foster or impede the purposes of the group.

Sound multicultural education can be achieved only through a program of instruction that actively uses multicultural values and material, and structures the activities and the school environment in such a way that the child's awareness and appreciation of diverse ways of life are positively fostered. Harrington suggests that multicultural education should be fostered because it can prevent psychological, emotional, and social conflicts between groups and because it can have positive adaptive value in a culturally-plural society such as that found in the United States. He reminds us that the schools cannot be a total cure for the cultural insulation and stratification of present-day society, but he argues that the schools must not themselves contribute to the maintenance of such insulation and stratification. A diversity of educational environments, treatments, and outcomes is suggested for promoting multiculturalism in the schools.

Harrington offers the following implications of his conceptualization of culture for designing and managing teaching and learning transactions.

> 1. We need to increase the diversity of educational environments in order to increase the likelihood that children will find several environments in which they can experiment and successfully function.
>
> 2. We need to increase the number and the diversity of educational outcomes sought for assessment as well as the procedures for measuring them.
>
> 3. We need to nurture the legitimacy of multiple educational outcomes that foster cultural pluralism without reinforcing social stratification.
>
> 4. We must insist on curriculum models, curriculum definitions, teaching materials, and teaching approaches that allow for the examination of what goes on in school as part of a larger context--the rest of the child's life. (Chapter 6, p. 6.35)

These implications are directed at the content and the process of these transactions. Of equal significance is a concern that Harrington shares with Grannis that it is not the instructional content that is the most important learning conveyed in school; rather it is the whole structure of the school that teaches students about the nature of our society, their possibilities within the society, and the ways of coping individually and collectively with given constraints. They conclude that content must not supersede process. It must be remembered that pupils not only come from distinct cultures, but that they come into schools and other learning settings that have their own cultures. These combined cultures determine what is to be learned, how it is to be learned, and, in large measure, the effectiveness with which it is learned. Culture provides the frame and the context as well as the content, but it may well be that it is the context and the processes supported by that context that are primary.

Language Diversity, Individual Diversity, and Cultural Diversity

Languages are collections of repertoires with appropriate occasions (setting, topic, social status of the participants) for their realization in speech or other communication modes. The focus of language study has shifted in the last fifteen years from the smallest linguistic unit, the phoneme, to a study of the most molar units that address the cultural-cognitive determinants of language use. Freedle's chapter deals with those molar units, with the social uses of language in real-life settings.

Freedle turns to the recent sociolinguistic literature for examples of important sources of miscommunication. His examples illustrate how people use persistent and recognizable ways of packaging information to make sense of the world about them. At the individual level, these persistent tendencies have been called themes; at the cultural level, they have been called schema. These schema exist in gestalt clusters at many levels of culture. Freedle speculates that the process that leads to internalized schema is probably the same for all cultures, but the contents and forms of the schema differ across cultures.

In his examples of miscommunication at work, Freedle repeatedly uses several concepts--goals, settings, participants, outcomes, sets of possibilities, values of outcomes, and the likelihood of negative outcome. These concepts are brought together in a more organized fashion by Freedle through the application of the Inquiring Systems Theory. Through the use of levels of hierarchies of schema, the five systems he introduces can handle many of the complexities that occur in communication. The theory is also useful in measuring the completeness of an analysis. Have we accounted for values, goals, pathways, outcomes, and decision type? Have we looked at the likelihoods of competing solutions from the participants in the communication setting? Have we determined other pathways that they might have pursued? Such a complex decision theory is needed, Freedle argues, if we are to discover practical ways to monitor the success of educational changes in practice with respect to bilingual interactions in the classroom.

From the perspective of Freedle's systems, educational change is more accurately characterized as cultural change. Freedle recommends that social scientists set about performing the ethnographic work necessary to describe the goals, alternatives, values, and pathways that influence individuals' decision making. We might then be able to quantify and label the types of inquiring systems that are used in particular settings, for particular topics, between particular individuals. In this way, Freedle hopes that we may gain the necessary data to make rational recommendations about educational change.

Achievement in Blacks: A Case Study in Cultural Diversity in Motivation

In this chapter, Banks presents a fundamental reconceptualization of motivation. He argues that an effective understanding of motivational diversity, although not evident from past interpretations, is interpretable from the evidence of past research on achievement in blacks. Using that evidence, Banks dismisses the notion that there is some fundamental drive to achieve that differentiates those who do from those who do not. The general diversity of motivation observed across identifiable cultural groups relates largely to the kinds of socialization experiences by which different tasks and contexts acquire meaning and significance. The same kinds of cognitive processes that mediate the early learning (socialization) are in turn brought to bear upon the experiences with reinforcement systems and achievement outcomes that are variously associated with the performances within a common context of persons differing in cultural background. He further argues that what is most striking is the derivation of highly specific patterns of those cognitive processes likely to be evoked by different persons from the highly discriminant manner in which situations and the reinforcement agents who control them relate to different individuals.

In support of these conclusions, Banks identifies several divergent aspects of the topic of achievement. These aspects include a distinction between achievement outcomes and achievement behaviors, perceived probability of success, aspirations, and goal valuation.

Achievement outcomes are criterion events that are characterized by the presentation or acquisition of a contingent product, real and material, or nonmaterial and symbolic. Examples are socioeconomic status, educational level, and grade point average. Achievement behaviors are directly observable aspects of actual outputs from the person, such as the rate and strength of response. The distinction is important, Banks argues, because behaviors are not likely to account entirely for achievement outcomes except in an errorless evaluation system.

Banks reviews the evidence on black achievement outcomes and behavior and finds that although blacks represent a lower stratum of economic, occupational, and educational achievement than do whites, global consistency within the population is absent from the systematic research. In particular, blacks have shown the capacity to achieve in the cases where their views of the school environment are favorable, they perceive themselves in control of their environment, the social context in which they perform is characterized by like-race persons, and/or the task is of importance and interest to them.

Banks argues that it is not clear from the findings to what extent such specificity represents variance associated with the intrapopulational diversity of black individuals, or variance is associated with the vicissitudes of the situational contexts within which achievement is undertaken. Most research has addressed the former hypothesis. The search for the important moderators of achievement in blacks has focused upon such intrapersonal constructs as motivation, aspiration, anxiety, and self-esteem. Some investigators have studied the relationship of these constructs to behavior directly, whereas others have studied them in conjunction with their social-situational antecedents and moderators. Banks proposes an alternative theoretical framework in which the important causal antecedents are presumed to reside not in the person, but in the situational context itself. He concludes that researchers in this area need to turn their attention to the functioning of the reinforcement systems that characterize the salient achievement contexts in our culture. For teaching and learning transactions Banks' reconceptualization of motivational diversity suggests that we look equally as hard for the prompting forces for learning in the learning tasks and situations, as we have traditionally looked for these forces in our students. In fact, if we follow the Banks notion to its logical conclusion, motivation must be viewed as a manifestation in persons of the acquired ability of stimuli contained within situations to attract and sustain the performance of that person. If so, the motivation of the learner must be viewed as a function of the appropriateness of the teaching.

Identity as a Variable

Nevas begins her chapter on identity with a discussion of the theoretical issues surrounding the topic. She identifies three general features of identity: coherence, stability, and relationship. Two forms of identity are introduced: basic and qualitative. Basic identity is the nonreflective state in which existence is taken for granted--a feeling that all is well prevails. Qualitative identity refers to what stands out about a person, and how the person defines him or herself. Nevas also reports that scholars have frequently chosen one of two orientations to the study of identity. These two orientations are (a) to individuals versus groups, and (b) to subjective versus objective interpretations of reality. The first orientation is evident in the fact that psychoanalysts and social psychologists seem to view identity differently than sociologists do. A resolution of the dichotomy of the second orientation is found in the work of Yankelovitch and Barrett. These authors argue for restoration of the respectability of subjective evidence as fundamental to a valid view of "objective" reality. They plead for new attention to the analysis of meanings.

Identity is assessed in a variety of ways. In its basic form, identity is assessed in clinical and educational contexts. The interview is the standard assessment procedure in the clinic, whereas in the educational context, level of development has been the focus, and an instrument to measure status along an identity continuum has been developed. In its qualitative form, indirect measurement of identity is common; constructs often taken as proxies for identity have been measured extensively. The two most prominent examples of such constructs are self-concept and role.

Nevas identifies several outcomes of identity development. These include interests, a sense of belonging, a feeling of security and acceptance, and self-esteem. The impact of these outcomes on education is discussed. Nevas argues that the school should provide activities diverse enough to allow all of a child's strengths and interests to emerge. Educators should be alert to and flexible in conceiving the forms that capacities and interests may take. Self-esteem should be boosted through positive experiences in an effort to overcome weaknesses. Role models may also prove useful in overcoming conflicts between certain school activities and peer or community norms. A wide variety of roles in both classroom and extracurricular activities should help children to feel a part of a school. Measures that solidify a child's link to school, such as community participation programs or parent participation programs, should also tend to increase a child's sense of belonging.

Nevas concludes that the implications of identity for education follow from her view that identity represents a balance between the individual and the social.

It is through the pursuit and maintenance of this balance that our knowledge of identity informs educational practice. Nowhere is the reconciliation of subjective reality as opposed to objective reality (Grannis' Congruence Phenomenon) more crucial. Perceived congruence between sense of self and the content of the learning experience, sometimes called relevance in the sixties, is thought to be essential to learning task involvement. Perceived similarities between attributes of learners and the characteristics of available teachers and models (identification) are thought to influence positively the relational aspects of teaching and learning transactions. Our knowledge of identity and the concern with balance between the individual and the social is less informative when we turn to the problem of boosting self-esteem and enhancing self-concept. Traditionally we have assumed that successful experience, positive social interactions, consistent experiences of self-reflection and consistent patterns of reinforcement should result in positive feelings about self and the consolidation of one's identity. However, particularly from clinical practice, we see that vast differences can exist between basic identity and qualitative identity. Since attributions, personal aspiration, and meaning so greatly impinge on qualitative identity while objective reality is likely to weigh more heavily on basic identity, the two have the capacity to move in opposite directions. Thus externally defined criteria for the reinforcement or even creation of self-concept and self-identity can run afoul of their purpose. It is the personal interpretation or subjective evidence that is crucial, and in practice this is often least susceptible to accurate assessment by others. In teaching and learning transactions, then, particular attention must be given to the learner's view of his/her own identity and to clues from the learner concerning his/her own estimates of the reinforcement value of naturally occurring or contrived situational phenomena. This interpretation of other's data about one's identity may be helpful, but in the final analysis it is my own interpretation of my own data from my own value perspectives that is likely to be decisive. Thus in relation to the several status dimensions of human diversity discussed in this report, identity--with respect to culture, ethnicity, or gender, for example--that is assigned is useful primarily in determining how others may treat or assess the individual. Assigned identity has little utility when the task is to determine how one views or assesses one's self.

The Educational Relevance of Health and Nutritional Factors

In her chapter on the educational relevance of health and nutrition factors, Hertzig argues that a serious attack on the problem of school failure requires an attack not only on the social and cultural variables relevant to educational achievement but on the biosocial factors as well. Hertzig examines a variety of health-related events and their educational consequences. She reports that prematurity and other complications of the birth process, as well as nutritional inadequacy, are strongly associated with later intellectual and educational difficulties. Cravioto and his collaborators found that severe malnutrition may interfere with development and learning indirectly through loss of learning time, interference with learning during critical periods of development, and motivation and personality changes. Repeated hospital admissions during the preschool years also affect learning and school behavior, especially in children who are highly dependent on their mothers or who are under stress at home at the time of admission.

The experience of physical illness has a negative effect on the educational progress of some children but not of others. Even with knowledge of the type and severity of insult, interference with educational progress is impossible to predict. Hertzig argues that a better understanding of the differential impact of physical illness on different children will come from a consideration of extra-illness characteristics of affected children, and an examination of features of the familial and broader social environments in which such children grow and develop.

Hertzig points out that biologic variation within the normal range may also bear a relationship to school performance and behavior. Individual differences in receptor preferences and intersensory organization may underlie the development and expression of particular learning styles. Differences in biologic rhythms may be reflected in variations in attention and interest. Hertzig also speculates that idiosyncratic patterns of success and failure may be related to the timing of the presentation of particular subject matter during the school day.

To Hertzig, the public policy implications of the association between ill health and less than optimal school performance are the same as they were over ten years ago. The life circumstances of those individuals within society who are at greatest risk of ill health must be improved. Systematic attention to the health and nutrition of pregnant women, infants, and young children; scheduled immunizations; careful monitoring of early developmental progress; provision for the prompt and effective treatment of illness as it occurs in young children; and discriminating use of hospitalization, can all contribute to improvement in the health status of children. In addition, the familial stresses that accompany social adversity could be reduced through improvements in the standard of living of the poor in the form of better housing, improved employment opportunities, increased income, and adequate provisions for day care of children of working mothers.

Our tendency to focus on the pathological aspects of development and health may lead educators to underattend to the wide variations in the normal range of physical conditions and biological functions. Although the basis in research for our knowledge of the relationships between such variation and learning behavior is limited, clinical impressions and logic support the direction of Hertzig's concern that individual differences in this sphere not be ignored. Despite the pseudoscientific exploitation of emerging knowledge of biorhythms, it seems clear that there is wide diversity in the patterning of rhythmic biological and psychological functions, which seem to influence, if not regulate, aspects of behavior. Most of us have observed apparent regularity and erraticness in mood, energy level, attentional behavior, and general "togetherness." Most of us have experienced the lethargy and malaise associated with periods of depressed function (but not depression) and "feeling bad" (but not illness). Some of us are almost incapacitated by simple disorders. Some people function well on single feedings per day while others become highly irritable within an hour past one of the three or four scheduled meals. These individual differences in physical conditions and biological functions can have telling influences on the learning behavior of pupils and require far more serious attention and planning than we have traditionally given. The monitoring, then, of related behaviors and relevant histories in the so-called normal range may not be as important as in obviously ill or handicapped persons, but it may well require the attention of educators who are serious about optimizing the learning behavior of all children.

Affective Response Tendency

Following Guilford and Cattell, Thomas divides behavioral phenomena into the what, why, and how of behavior. One aspect of the what of behavior consists of the specific emotional states or traits, such as interest, joy, anxiety. The why of behavior is the influence of such specific emotions on the shaping of motivational patterns. Affective response tendency, or temperament, is the how of behavior and is defined as the characteristic tempo, rhythmicity, adaptability, expenditure, mood, and focus of attention, independent of the content or level of any specific behavior.

Thomas hypothesizes that affective response tendency and cognitive response tendency--overlapping categories--reflect patterns of neurophysiological and/or neurochemical organization. These patterns express the characteristic modes of response of the human brain to environmental stimuli, demands, and expectations. He asserts that the wide range of variation in individual response styles may have evolutionary adaptive significance.

The concept of affective response tendency differs from earlier theories of static, fixed constitutional typologies and from the one-sided environmentalist view of a generation ago in its emphasis on the interaction of the child with the environment. Thomas and his co-workers use the evolutionary concept of "goodness of fit" in their analysis of the child-environment interactive process. When consonance exists between organism and environment, optimal development in a progressive direction is possible. Conversely, poorness of fit results in distorted development and maladaptive functioning. Given that demands and expectations change as the child grows olde., the concept is a homeodynamic one, which has as its end result developmental change and expanded competence rather than the maintenance of equilibrium.

Thomas, Chess, and their co-workers have conducted a major long-term study of temperament. Nine characteristics of temperamental individuality were defined in the study by an inductive content analysis of the behavioral protocols for the infancy period in the first 22 children studied. These nine characteristics are approach or withdrawal, quality of mood, intensity of reaction, activity level, adaptability, sensory threshold, distractibility, attention span and persistence, and degree of rhythmicity of biological functions. Three temperamental constellations were identified--the Easy Child, the Difficult Child, and the Slow-to-Warm-Up Child.

Quantitative and qualitative analyses of the relationship of temperament to school functioning and academic achievement have been conducted. In one quantitative analysis with the longitudinal sample, significant correlations were found between low academic achievement scores and the temperamental traits of nonadaptability and withdrawal, but not for high intensity, negative mood, or arhythmicity. Qualitatively, observers have noted that highly active or distractible children frequently annoy their teachers and learn poorly in permissive, unstructured school situations. Another frequent observation has been that teachers often misjudge the slow adaptability of the Slow-to-Warm-Up Children as evidence of inferior intelligence or anxiety.

When low-activity and slowness of response are conspicuous and the school program is rigidly and tightly scheduled, the child may easily become the butt of the teacher's impatience and his classmate's ridicule. For youngsters with the Easy Child temperamental pattern who adapt easily to learning and socialization demands, a pattern of parent-child interaction may develop in which the child's behavior is responsive to the individualized attention provided by the appreciative parent. However, this ease of self-expression, spontaneity, and sense of individuality may prove dysfunctional to the demands of group learning where the teacher cannot provide comparable individualized attention. Despite these demonstrated associations between patterns of temperament and adaptability to school, Thomas emphasizes that temperamental characteristics are sometimes but not always influential in the development of school problems.

Cognitive Styles: Some Conceptual, Methodological, and Applied Issues

Shipman and Shipman discuss the methodological and conceptual issues involved in the study of cognitive styles. Cognitive styles differ from cognitive abilities or skills in that the former refer to the mode or character of cognitive functioning, whereas the latter refer to the level of functioning. Styles have been conceptualized as basic information-processing habits for organizing perception and cognition, and are thus thought to characterize the individual's functioning in a wide variety of domains. Although the authors share this general conception, they are concerned about the wide variety of constructs and modes of functioning identified as cognitive styles.

The authors begin their discussion with a list of the many constructs that have been identified as cognitive styles. They caution that the list must be provisional since overlap and definitional problems are common. Three cognitive styles are then discussed in depth: field dependence/independence, conceptualizing styles, and reflection/impulsivity.

Field independence is generally considered to be the ability to perceive and operate on a stimulus independent of its embedding context. The Embedded Figures Test is the most widely used measure of this construct. Conceptualizing styles are the bases on which people categorize objects in a free-sort task. Several tasks exist for assessing this style. The most popular scoring system distinguishes among descriptive, relational, and categorical modes. Reflection/impulsivity has been traditionally defined as the willingness or ability to reflect on the accuracy of solutions in a situation of response uncertainty. There are several measures of this construct in which the subject is presented with several highly plausible alternatives, only one of which is correct. Kagan's Matching Familiar Figures is the most common of these measures.

The authors discuss problems peculiar to the three selected styles and problems general to the area of cognitive styles. Among the problems they note are the lack of a generally agreed-upon definition for styles in general and in the particular, the lack of integration with the dominant theories in psychology, the over-identification of a style with its measurement operation, and the unclear relationship to cognitive abilities and skills, personality, and the affective domain.

Shipman and Shipman present a list of threats to the generalizability of styles as they are now identified and defined. Their list includes such factors as the developmental process of the styles, the influence of normal development of competence on the expression of style and on the understanding of task demands, the role of individual differences in perception, the influence of context on the expression as well as choice of style, and the lack of an adequate taxonomy of situations and their impact on the individual.

The chapter concludes with a discussion of implications for research, development, and education. Among the many interesting suggestions for education are:

> That assessment of students' cognitive styles, the "how" in addition to the "what," would contribute significantly to [the] description of "entry characteristics" for improving the quality of instruction by indicating the extent to which cues, practices, and reinforcement are appropriate to the needs of the learner. (Chapter 12, p. 12.55)
>
> Since stylistic tendencies may lead to, as well as originate from, different reinforcement histories, it would appear important to compensate for this by providing a broad range of experiences.. . . (Chapter 12, p. 12.57)
>
> The concept of styles suggests [for assessment] an alternative focus on individual patterns of functioning across tasks and domains rather than a sole emphasis on accuracy. (Chapter 12, p. 12.57)
>
> We should not . . . confuse individual difference dimensions with group classification/segregation. . . . individuals reveal a particular style to varying degrees depending on the task, setting, purpose of the assessment, prior experiences and other . . . characteristics. (Chapter 12, p. 12.58)
>
> We should not consider students on the basis of a single characteristic; instead, we must examine several characteristics at once since they may influence or mediate the effect of the other characteristics. (Chapter 12, p. 12.59)
>
> . . . some cognitive styles may be too specific to be of use in understanding how a learner meets the complexity of a learning experience in the educational setting. The classroom situation is a complex and ambiguous one, and thus difficult to interpret from the individual's point of view. (Chapter 12, p. 12.59)

In agreement with Witkin et al. (1977) the authors urge, "for the educator, the development of greater diversity in behaviors within individuals seems as important an objective as the recognition and utilization of diversity among individuals."

The Objective Environment, Environmental Press, and the Diversity of Learners and Teachers

Grannis' point of departure is the environment side of person-environment interactions in education. He begins with treatment and setting variables and works toward their articulation with different individuals.

For Grannis, the "objective environment" is the environment that can be described by a consensus of external observers. He does not exclude subjective factors from such a consensus, but presumes that the operational definitions of elements and relationships in the environment would be shared to the extent necessary to attain a criterion of reliability among the observers. A central concern in the chapter is the concept of environmental "press," which was first defined by Murray as "The press of an object is what it can do to the subject for the subject--the power that it has to affect the well-being of the subject in one way or another."

Grannis reviews a variety of perspectives on how the functions of environment press. According to Murray's perspective, the environment proffers, denies, feeds, and starves. Lewin's perspective emphasized the psychological complexity of the environmental field and the interactive nature of the vectors in that field. Barker and his associates gave definition and methodology to an area of study called ecological psychology. Their two main strategies of data collection, behavior stream and behavior setting observation, are oriented to the discovery of units of behavior and milieu that recur in natural environments. Bronfenbrenner's emphasis on the systematic complexity of the environment is the final perspective of central importance in his view that the microsystem or immediate setting can not be fully understood independently of the broader settings in which it exists. No unit or vector is a phenomenon apart; each is a part of the larger system in which it exists.

In a section on the variety of environmental features, Grannis describes Moos' review of various systems for the assessment and classification of human environments. Moos' review includes geographical and meteorological variables; personal and behavioral characteristics of milieu inhabitants; psychosocial characteristics and organizational climate; and functional or reinforcement analyses of environments. Grannis reminds us that these are only a fraction of the environmental variables that research has attended to.

After reviewing the variety of environmental features, Grannis turns to person-environment interactions. He reports that many of the person-environment interactions that he has encountered fall under Lawton's "environmental docility" hypothesis. According to this hypothesis, the more competent the organism, the less will be the proportion of variation in behavior attributable to physical objects or conditions around the organism. After reviewing empirical support for the hypothesis, Grannis substitutes the concept of suscepibility for docility. He suggests that a hypothesis couched in terms of susceptibility might allow us to extend to more areas the general idea that the perceptions and behavior of some individuals are more dependent on given environmental circumstances than those of other individuals.

The congruence model is the second category of person-environment interactions that Grannis discusses. Whereas susceptibility stresses a predisposition to environmental overdetermination, congruence typically suggests a match between person and environment that is optimal for the fulfillment of a need or purpose, or that is an equilibrium that has resulted from accommodations between person and environment. The concept of congruence is reviewed as it bears on transactions between students and staff or program elements, transactions between students and the goals or outcomes of the environment, and transactions between staff or program milieu and treatment goals or outcomes. Grannis concludes that the congruence model requires revision to include both participants' and external observers' perceptions and measures of students, staff and program milieu, and goals and outcomes. The major implications for education flow primarily from this revised congruence model. According to this conception it is the attributional character (beta press) that is projected on to the environment by the perceiver that gives environmental press a critical role as a determinant of human diversity and as an issue to be contended with in teaching and learning transactions.

Grannis outlines many implications of his approach for instruction and further research. The implications reflect the richness of this approach to already standing patterns of behavior milieu. The first and most important one is that teachers and researchers might study specific situations in light of the revised congruence model. This application of the model will allow the illumination of both the pragmatic and symbolic features of the environment under observation. One asks what is the significance of the physical design of the setting, of the students' grouping and spacing pattern in the classroom of the interaction patterns between teachers and students and among students. The teachers' press for conformity and independence, a more competitive or collective interaction model, and visual vs. oral vs. tactile exchange of information, are among the instructional variables that might most fruitfully be manipulated in relation to students' needs and preferences in light of the congruence model.

Commonalities and Concerns

Despite the variety of topics under discussion, several themes recur in these chapters. One of these themes might loosely be called a concern for the settings in which behavior occurs. Grannis took setting variables as his motif and worked his way back to the individual, whereas Banks began with a review of individual diversity in achievement motivation and concluded that the causes of this diversity resided not in individuals but in achievement settings. Harrington and Freedle expressed their concern for settings in their discussions of methodology. Both stressed the importance of *in situ*, ethnographic approaches to the study of cultural and linguistic diversity in educational contexts. An appreciation of the priority of settings is apparent in the arguments advanced by Bond, Harrington, Hertzig, and Yeakey that the schools cannot eliminate the social stratification of the larger society. Although the schools should not contribute to stratification, as Harrington and Bordier argue, they cannot erase the effects of these forces in the larger setting. One only hopes that they can modulate them.

Since the enterprise of assessing persons has proceeded apace in psychology for decades, we applaud the attention to settings of the authors in this volume. However, we echo Pervin's (1978) concern over the alternative ways in which stimuli, situations, and environments have been defined, measured, and classified. Investigators often undertake research without attention to alternative definitions and measures and the implications of choosing one or another definition and measure. This inattention often results in confusion over the relationships of findings from various studies. Another result is that alternative types of data that might be collected are often not so in reality, thus precluding the possibility of comparisons of data from different measures. Pervin's concerns with alternative definitions and measures gain cogency from the confusions reported in the treatment of several dimensions of diversity. Particularly in the study of affective response tendencies, cognitive style, and motivation, our authors call attention to the conceptual and methodological problems that flow from narrowness or exclusiveness in definitions and measures of the construct under question.

It is, however, the concern with settings or situations that is ubiquitous in all of the work reported here. Each of the constructs discussed is thought to be significantly influenced by the situation in which it is called forth, out of which its genesis is thought to be derived, and upon which its expression is contingent. So great is this renewed Lewinian concern for situationalism that considerable tension exists between theorists emphasizing setting/situational influences and those emphasizing personalistic influences. Nowhere are the issues more clearly drawn than in the search for cross-situational consistencies in behavior. Despite our intuitive feelings that people can be described and classified by many of the attributes discussed in this report, the evidence seems to indicate that with respect to individual responsiveness such consistency across situations and settings is difficult to demonstrate reliably. The Bem and Allen (1974) treatment of this problem is helpful.

> We have argued in this article that it is not possible, in principle, to do any better than predicting some of the people some of the time. Furthermore, our arguments would seem to imply that an investigator must simply abandon the highly variable individual since the trait under investigation has no predictive utility for him. But this is not always true. As Mischel (1968, 1973b) has persuasively argued, variability is not synonymous with either capriciousness or unpredictability. Indeed, an individual's cross-situational variablity may well be the mark of a highly refined "discriminative facility" (Mischel, 1973b), the ability to respond appropriately to subtle changes in situational contingencies. Although such an individual cannot be predicted from a knowledge of his standing on a personality trait, he may be precisely the individual who is most predictable from a knowledge of the situation. In short, if some of the people can be predicted some of the time from personality traits, then some of the people can be predicted some of the time from situational variables. (p. 517)

The Bem and Allen position suggests situation or problem-determined alternation in the use of situations and personality traits in the prediction of behavior. What is probably a better conceptualization of the issue is represented by the interaction phenomenon (see Bem & Funder, 1978). This is the second recurrent theme which flows through several of the chapters of this book--the individual in relation to the environment (setting/situation).

Thomas treats this theme in his use of the concept of "goodness of fit." Grannis examines person-environment interactions that fall under the environmental susceptibility hypothesis and the congruence model. He concludes that a congruence model, that is, a model of the match between person and environment, must include the individual's perceptions of the environment. There are actually two threads running through this second theme. The first thread is the belief that person-environment interactions rather than the person or the environment will account for most of the psychologically interesting variance in behavior.

By person-environment interaction, we believe these authors to mean more than a variance components approach to interaction. Their concern is with how person variables and situational variables combine in their relation to behavior. This concern with interactions avoids alternating emphases on person attributes and environment or situation attributes, but in each instance is concerned with the nature and outcome of the dialectical interpenetration of one with the other. The interactionist position accepts the cruciality of both. According to Bowers,

> An interactionist . . . view denies the primacy of either traits or situations in the determination of behavior; instead, it fully recognizes that whatever main effects do emerge will depend entirely upon the particular sample of settings and individuals under consideration. Thus interaction views main effects as a sort of behavioral precipitate that does not readily dissolve in the fluid interaction of organism and environment. More specifically, interactionism argues that situations are as much a function of the person as the person's behavior is a function of the situation. (Bowers, 1973, p. 327)

The second thread in this theme is the belief that the classification of situations must be in terms of the individual's own phenomenology, not the investigator's. Bem and Allen (1974) aptly demonstrated this point empirically by abandoning the nomothetic assumptions of traditional research paradigms and using idiographic assumptions in their place. Reflecting their deep concern that personality assessment must attend more seriously to the phenomenological person, they stress the importance of detailed descriptive analyses of persons and situations (Bem & Funder, 1978). This theme is reflected in the Banks reconceptualization of motivation, in Freedle's concern for schemata in understanding language, in Grannis' use of a congruence model to include the interpretation of the individual's perceptions of and adaptations to the situation, and is emphasized by Nevas in her concern for the individual's perceptions in her discussion of the Yankelovich and Barrett work. The authors argue that subjective evidence is fundamental to a valid view of a person's reality. This theme, as is suggested by Grannis' discussion, has its roots in Murray's beta press, which was the primary focus of Lewin's work. In recent years it is reflected in social learning theory particularly as asserted by Bandura (1978).

> In social learning theory a self system (a schemata by which the phenomenological person can be identified) is not a psychic agent that controls behavior. Rather, it refers to cognitive structures that provide reference mechanisms and to a set of subfunctions for

> the perception, evaluation, and regulation of behavior. (p. 348)

In addressing a conceptual or methodological issue, this concern with the individual's own phenomenology--his or her own personal meaning--is asserted as essential to environments, settings, and situations as well as persons themselves, and must be viewed in their subjectively perceived realities as well as in their objective realities.

At least two of our authors discussed a problem that cuts across the major themes described above. The problem is that of transcontextual validity, and it is encountered in Thomas' discussion of affective response tendencies and in the Shipmans' discussion of cognitive styles. It is implicit in several of the other chapters included herein. Weisz (1978) describes transcontextual validity as the veridicality of principles across physical and cultural setting, time, or cohort. For Thomas and the Shipmans, the problem is whether the response tendency that the child exhibits at one age is the same tendency he exhibits at a later age. Given the changing context of the child's world, the problem is a particularly intractable one. The solution to the problem probably transects our themes; that is, it will come with definitions, measurements, and classifications of contexts that lend themselves to description in terms of the individual's own phenomenology.

In the fourteen commissioned chapters of this report, conceptualization of person-environment interactions, problems of equity and social justice, and processes of education have been the backdrop against which dimensions of diversity in human attributes and some of their implications for schools have been discussed. Why have we given so much attention to diversity in human attributes and environments? It is not that individual and group differences or environmental factors are new concerns in education. Rather, it is the recognition that effective education and learning may hang on the narrow threads of balance between the multiple factors that constantly interact to influence behavioral development and expression. When that balance is in a state of equilibrium--Thomas' homeodynamic state--effective development and learning are achieved. When that balance is disturbed or its potential expression is precluded by variance or atypicality in one or more of the dimensions of diverse human attributes, effective development and learning are subjected to risk. Either other dimensions of the indigenous system (person) must adapt and substitute or elements of the exogenous system (environment) must accommodate or compensate. If the indigenous system is too naive or weak to mount the necessary adaptation and the exogenous system is lacking in the necessary resources (or will to allocate them), maldevelopment or malfunction (ineffective learning) occurs. Thus diversity, even if a situationally handicapping condition, is less important as a deterrent to effective development and learning in the presence of adequate intrinsic or extrinsic resources. It is the combination of variance from the norm and inappropriate or insufficient resource supports for development that is the final culpable condition. It is to better understand the mechanism by which that condition exists, and ultimately to prevent or change it that we devote our energies to the study of Human Diversity and its Pedagogical Relevance.

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